FORMS4WORK
Version 1.5

User Manual

FORMS4WORK

User Manual

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1 Introduction

FORMS4WORK connects printing systems of different performance classes to various LAN and host topologies. The usage of an emulation enables conversion of various data streams into standard data formats (such as PCL and PDF) which can be understood by the printing system.

FORMS4WORK therefore secures investments in expensive hardware and specially developed software. Thus high performance printers can be used by non-compatible data sources as well.

Moreover, older printer models can be replaced with more powerful printing systems.

2 Requirements

System requirements for FORMS4WORK:

Hardware: Monitor, keyboard, mouse, CD-ROM drive, 128MB RAM, TCP/IP connectivity over Ethernet or Token Ring

Operating system: Microsoft® Windows NT/2000/XP Server™ or NT/2000/XP Workstation™. Windows NT requires Service Pack 6 or above (you can install Data Center on Windows 9x/Me but it is not recommended).

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FORMS4WORK uses Info-ZIP's compression utility. Info-ZIP's software (Zip, UnZip and related utilities) is free and can be obtained as source code or executables from various anonymous-ftp sites, including ftp.uu.net:/pub/archiving/zip/*.

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3 Installation

To install FORMS4WORK on your computer, it must be set up using an operating system supported by FORMS4WORK. Before installing the software ensure that the hardware components for data communication (network adapter, cables and other devices) have been installed correctly.

The following supplied components are required for the installation:

- The FORMS4WORK installation CD
- Your FORMS4WORK license number

Read the license agreement carefully before you install and use the software. If you use the software you declare your agreement to the terms of the license agreement.

Follow the listed installation steps to set up FORMS4WORK properly on your computer. All the information below refers to the use of FORMS4WORK with Windows NT/2000/XP.

The installation of FORMS4WORK essentially consists of six steps:

1st step: Boot your computer. Log on with an account that has administrator rights.

2nd step: Insert the supplied installation CD into the CD drive in your computer. If the installation program does not start automatically, start Windows Explorer to install FORMS4WORK. Open the CD directory FORMS4WORK/Basis using Explorer and from there start the program FORMS4WORK.exe

3rd step: Follow the instructions of the installation program. Enter your FORMS4WORK license number as soon as you are asked to do so. You find the license number on the license card supplied with the software.

4th step: Reboot your computer as soon as you are asked to do so by the installation program. Log on again with an account that has administrator rights.

5th step: Start the FORMS4WORK system service by using the administration applet for Services from the System Control. Select FORMS4WORK Server (TCP/IP) from the list of system services and click on Start. To start FORMS4WORK automatically after a system start, you will have to change the start options of the service from Manual to Automatic.

6th step: As soon as the system service has been started, you can set up the print processes you require using the FORMS4WORK Client application for setting up Input Ports, Emulations and Output Ports (see Configuration).

4 Principles

4.1 Components

The concept behind FORMS4WORK is based on a modular element system of components. Each component has connections, so-called ports, using which they can be combined with other components.

If we take the aim of FORMS4WORK as a basis, it can be divides as follows:

- Acceptance of print data
- Processing or emulation of print data
- Transfer of the processed print data

This initially leads to a rough distinction of components and splits all the modules of the system into three main groups:

Input Interface

The input interface connects the FORMS4WORK system with the host computer. This component makes the connection to the host computer or a data source using the hardware ports of the FORMS4WORK system.

Possible ports include the following

- **Network** (for example Ethernet, Token Ring, SNA)
- **Hardware options** (for example channel adapters)

Emulation

This is where the print data are prepared for the output device.

Output Interface

When the print data has been processed by the emulation or passed through, they are passed on to the output device using this component. In this case, too, the connection is made using the hardware ports of the FORMS4WORK system.

4.2 The Standard Application

The standard application of FORMS4WORK can be based on one component from each of the three main groups:

- Input Interface
- Emulation
- Output Interface

The example describes the easiest way of outputting print data from a host computer on a printer using FORMS4WORK. The following components are used for this purpose.

Input Interface

The input interface connects the FORMS4WORK system with the host computer. This component makes the connection to the host computer or a data source using the hardware ports of the FORMS4WORK system.

Possible ports include the following

- **Network** (for example Ethernet, Token Ring, SNA)
- **Hardware options** (for example channel adapters)

Emulation

This is where the print data from Host and/or network are prepared for the output device (e.g. PCL b/w printers, PDF color printers, Internet, file, etc.).

Output Interface

When the print data have been processed by the emulation, they are passed on to the output device using this component. In this case, too, the connection is made using the hardware ports of the FORMS4WORK system.

4.3 Input Interface In Detail

Depending on the type of port used, an **Input Interface** may be made up of several components. One example of this is an Input port that receives print data with the PPD/PPR protocol via TCP/IP.

In this case the input interface, which we have previously regarded as a single entity, consists of a transport component, namely the TCP/IP network protocol and the communication component, e.g. the PPD/PPR protocol.

What components are offered or supported by the various input interfaces depends mainly on the hardware port of the FORMS4WORK system that is used by the input interface.

Protocols for communication, however, are one of the most important types of components. These are regarded in the FORMS4WORK system as a property of the input interfaces.

4.4 Emulation In Detail

An **Emulation** generally converts print data from one standard language - for example IPDS - into another standard language - for example PDF. To allow as many applications as possible to use this facility, there is an option to process the data using so-called **Filters** before and / or after the actual Emulation.

In other words the emulation component can be split into Pre Emulation Filter (= Input Filter), Emulation and Post Emulation Filter (= Output Filter).

Examples of filter components include

- Stringchange filter
- Conditional Stringchange filter
- Codepage Filter
- Recordchange Filter

Special filters are:

- Barcode Filter
- Overlay Manager

Filters can be linked arbitrarily, in other words Input Filters A and B can be used as follows:

- **A-B or B-A**, the data pass through both filters in sequence
- **A-B-A-B**, it is possible to repeat the filters in the data flow
- **A-B-C-D**-etc., no limit to the number of filters used

The same applies, naturally enough, for Output Filters.

4.5 Output Interface In Detail

Output interfaces may be made up of several components, depending on the type of port used. FORMS4WORK knows DOS devices, Files, TCP/IP with/without LPR protocol, SMTP, Printers and Fiery as possible output interfaces.

What components are offered or supported by the various output interfaces, depends, as with the input interface essentially on the hardware port of the FORMS4WORK systems that is used by the output interface.

Protocols for communication are also regarded as a property of the output interfaces in the FORMS4WORK system.

Another property of output interfaces is spooling. This is similar to the Protocol, and as such represents a component of the output interfaces, which can be enabled or disabled as required.

4.6 Variable Configuration

The simple application is not always sufficient, but the concept of FORMS4WORK allows all components to be combined almost arbitrarily.

4.7 Processes And Threads

The efficiency of a FORMS4WORK system is primarily dependent on the hardware. Nevertheless the efficiency is also influenced by the configuration. FORMS4WORK is not just a program that is active on the system, but is consists of a number of modules, as described in the section Components.

The operating system distinguishes between processes and threads when it allocates processor time. A process corresponds to an application program that has been started, which in turn can start several threads for the parallel processing of data.

All the configurations described above within a FORMS4WORK system can be configured in one process, the **Print Process**.

This Print process uses several threads during its processing of print jobs. For example, several print jobs that arrive at the same time are processed in parallel in several threads.

The efficiency of a process falls with the number of threads, however, and therefore, if a large amount of printing has to be completed, it may be beneficial to distribute the whole print control over several

processes to achieve greater performance.

4.8 Specimen Application

The Situation

A global company (automobiles) is using IBM IPDS printers and wants to replace them with modern network printers and high performance b/w printers.

The Problem

The new b/w printers process PCL data and must be connected to an Ethernet network. The host applications, on the other hand, produce IPDS data.

The Solution

FORMS4WORK provides the link between the host and the network printer in the form of a bridge. The IPDS to PCL emulation allows the print data to be converted between the two printer languages. As a result of the module structure of FORMS4WORK, two 110-page b/w printers can be used, and if necessary other printing systems can also be added.

5 Program Components

5.1 System Service

The system service is the core part of the FORMS4WORK. It is used as an interface between the various program components.

In Windows NT/2000/XP it is permanently available. It receives the commands from the Client application through TCP/IP and sends them on to the print processes which it must start (emulation and input/output interfaces). The system service must also serve the opposite route for status messages, error outputs and dump information.

5.2 Print Process

The Print Process describes the processing of a print job within the FORMS4WORK print system. A Logical Printer within a Print Process defines three distinctive yet inter-related components as follows:

- **Input interface** receives the print job from the sender (host computer),
- **Emulation** translates the print job from one printer language to another (e.g. IPDS to PCL5),
- **Output interface** transfers the final print job to the receiver (print server, printer, file).

5.3 FORMS4WORK reference

5.3.1 Starting FORMS4WORK and logging in

To start the FORMS4WORK, click the Windows Start button and choose FORMS4WORK from the Programs menu; or, if you have created a shortcut to the FORMS4WORK application, double-click the FORMS4WORK icon on the desktop.

Before you can monitor or administer FORMS4WORK, you must log in to the server using the FORMS4WORK client software. By default the FORMS4WORK client software is installed on the same

system where the FORMS4WORK server resides. However you can also install and run the client software on a remote Windows workstation (default for the Linux version).

Connecting to a server
Access levels
Logging in

5.3.1.1 Connecting to a server

To connect to the FORMS4WORK server

1. Double-click the FORMS4WORK icon on your desktop, or click Start, choose Programs, then FORMS4WORK, and then FORMS4WORK. The Connect to FORMS4WORK Server dialog box appears.
2. Select a FORMS4WORK Server from the server list.
3. Click on the appropriate access level button.
4. Enter the password assigned to you by the administrator, and click Connect.
5. The FORMS4WORK user interface appears.

Server List

Displays the list of the available FORMS4WORK servers found in the same LAN (in this particular case in the same IP subnet) and which are running.

Password

Access to a FORMS4WORK server can be restricted by means of three passwords. In this way the access levels to the server are controlled dependent on the password given when logging in.

Connect

Click this button after you have selected a server from the server list.

Add...

Enter DNS name or IP address.

The Add button opens the Add Server dialog box where you can add an additional server to the server list. Enter the domain name or IP address for the server that couldn't be found automatically. See Connecting to a server for more information.

Remove

Remove selected server from server list.

The button will be disabled if you select a server that is currently connected or has been found automatically.

5.3.1.2 Access levels

The FORMS4WORK server software provides the choice of three access levels:
Administrator, Operator and Guest.

Administrator

Administrator access allows full management of the FORMS4WORK, including setup and configuration of print processes as well as starting, ending, and monitoring of printing jobs. Administrator access is only available on one computer at a time.

Operator

Operator access allows starting, ending, and monitoring of printing jobs. As Operator, you can cancel or restart printing jobs.

Guest

Guest access allows monitoring of printing jobs only.

5.3.1.3 Logging in

Connect

Click this button after you have selected a server from the server list.

Add...

Enter DNS name or IP address.

The Add button opens the Add Server dialog box. In this dialog box you can add additional FORMS4WORK server to the server list. If you do not automatically find a server in the list, you can manually add the server DNS name or its IP address. See Connecting to a server for more information.

Remove

Remove selected server from server list.

The button will be disabled if you select a server that is currently connected or has been found automatically.

5.3.2 The FORMS4WORK Client Software

The FORMS4WORK client application main window is displayed the first time a connection to the FORMS4WORK server is established. The main window displays the following sub-windows:

The Upper Window

The upper window displays the logical printers currently configured for this server.
The following describes the buttons at the top of the main window:

- **Start Logical Printers** Clicking this button starts the printing process. The Job List window appears. You can not add or remove a logical printer.
- **Stop Logical Printers** When enabled, the Stop Logical Printers icon shows red. Click the button to stop the printing process.
- **Edit Logical Printer** With a printer name highlighted, click this button to access the Edit Logical Printer window, where you can edit properties for each of the characteristics of the printer.
- **Add Logical Printer** Click this button to add a new logical printer.
- **Remove Logical Printer** With a printer name highlighted, click this button to remove the printer.

The Events Window

The lower part of the main window shows a list of events. Initially, the Event view only shows the time that the FORMS4WORK Client has been launched.

As soon as a connection has been made to the FORMS4WORK Server, any messages from the server and its active logical printers will be shown in the Events window. The message color-coding indicates their order of significance. A difference is made between the following levels:

- Error messages are shown in **red**.

- Warning messages are shown in **blue**.
- Information is issued in **black** lettering.
- Debug messages are issued in **gray**.

5.3.2.1 Setup and Configuration

5.3.2.1.1 Server

From the 'Setup' menu select 'Server...' to access server configuration.

Server properties and options refer to the configuration of the FORMS4WORK server which is running as system service. You must have administrator access to use this function.

You can view or modify

- Common server settings
- Connectivity
- Security options
- Accounting options

Common server settings

Start Logical Printers at server start

With this option enabled, as the FORMS4WORK Server starts, it will automatically activate the currently configured Logical Printers.

Default: disabled

after a delay of

Used to delay the automatic start of Logical Printers by x number of seconds. Delaying the start of Logical Printers might be necessary if more time is needed to load device drivers required by the FORMS4WORK.

Default: 0 seconds (no delay)

Restart not responding Logical Printers

Enabling this option will cause the FORMS4WORK to attempt to recover lost connections. If communication with a print process and its Logical Printers is lost, the FORMS4WORK Server will attempt to re-establish the connection.

Default: disabled

Size of event log files

Define maximum size of event log file (in kilobytes).

Default: 2048 KB

Connectivity

Server Address

Leave blank when the Print Server which runs FORMS4WORK server has only one IP address. If multiple IP address's are used, enter the local IP address or DNS name of the network interface which is to be used by FORMS4WORK server.

If you enter an IP address for this option and the Print Server's IP address changes at a later time. You will lose communication with the FORMS4WORK Server. This option will need to be updated if the Print Servers IP address changes.

Port

Currently used TCP/IP port address.

For internal communication the FORMS4WORK server and client use the TCP port address 49110.

Default: 49110 (not changeable)

Timeout

Set timeout for communication between server and print processes.

If the FORMS4WORK server is heavily stressed, print processes might be displayed as not responding. Increase this value to resolve this.

Default: 5000 milliseconds

DNS available

Enable if DNS is available in the network.

If enabled, DNS is used to resolve names to IP addresses.

If enabled although DNS is not available, system performance will be decreased.

Default: disabled

Security

The FORMS4WORK server software provides the choice of three access levels: Administrator, Operator, and Guest.

Administrator Password

Enter password for administrator access.

Administrator access allows full management of the FORMS4WORK, including setup and configuration of print processes as well as starting, ending, and monitoring of printing jobs. Administrator access is only available on one computer at a time. You should have Administrator access on the Fiery.

Operator Password

Enter password for operator access.

Operator access allows starting, ending, and monitoring of printing jobs. As Operator, you can cancel or restart printing jobs.

Guest Password

Enter password for monitoring access.

Guest access allows monitoring of printing jobs only.

By default, no passwords are set on the FORMS4WORK. If you do not specifically set passwords, all users will have administrator privileges, which include access to important functions such as Setup (including setting passwords), and job control. We strongly recommend that you set at least an Administrator password to protect FORMS4WORK from random or accidental changes to Setup.

Accounting

Active

When checked, the FORMS4WORK accounting system is activated and all jobs are processed within the accounting system.

Retrieve Popup address from DNS

If the username of a print job does not correspond to the account name of the user, the address of the Popup Tool may not be determined. Use this option to resolve the username by DNS. Only use this option, if usernames can be resolved by DNS without errors. Otherwise DNS requests may take some time and decrease the performance of the FORMS4WORK printing system.

Notify user when job has been printed

The user will be notified if the job has been printed successfully. This function is only available if the user address is known by FORMS4WORK. This depends on the configuration and the input ports used. For displaying the notifications the Accounting Popup Tool must be running on the printing client.

Notify user when printing failed

The user will be notified if the job could not be printed. This function is only available if the user address is known by FORMS4WORK. This function is only available if the user address is known by FORMS4WORK. This depends on the configuration and the input ports used. For displaying the notifications the Accounting Popup Tool must be running on the printing client.

Find server automatically in network

If checked, the accounting server will be searched automatically by UDP broadcasts in the network. Specify an address if you have more than one accounting server in your network or if the server can not be reached by UDP broadcasts.

Connect timeout

Timeout in seconds to connect to the accounting server

Communication timeout

Timeout in seconds for communication with the accounting server

Idle timeout

The connection to the accounting server is dropped after the specified number of seconds.

Password

If a password has been setup at the accounting server it has to be entered here. Otherwise leave it blank.

Accounting must be installed separately and has to be licensed.

5.3.2.1.2 Print Process Options

Print process properties and options refer to the configuration of its common settings and event logging behavior.

You must have administrator access to use this function.

Common print process settings

Name

Define name of the print process.

Max. Concurrent Jobs

Enter maximum number of concurrent jobs.

This value limits the number of print jobs that can be processed at one time by the print process. If Job Splitting is enabled, you might want to set this value to "1" to ensure job integrity. You might also change this value if the print process has to process very large and complicated print jobs or if a very large number of small print jobs occur at the same time.

Default: 0 (unlimited)

Delay job output

Define delay in job output.

If 'Max. Concurrent jobs' is set to 1, it is possible to define a delay in milliseconds which the print process should wait after closing one job and before opening the next.

Default: 0 milliseconds

Log levels

Do not use event logging for this print process

Set if you do not want the print process events to be logged.

Log event entries for

The following options are available for event logging:

- **Error messages**: Logs messages which occur while processing a print job. These are displayed in **red** in the Events Window. Error messages are always logged (default: enabled).
- **Warning notes**: Enable to log warning notes. Warning notes may require intervention and are shown in **blue** (default: enabled).
- **Basic information:** Enable to log basic information. Displays basic job information in the Events Window. These messages are displayed in **black** (default: enabled).
- **Extended information**: Enable to log extended information. Displays extended job information in the Events Window. These messages are displayed in **black**. This information is more detailed than the basic information (default: enabled).
- **Debug information for troubleshooting**: Enable to log debug information for troubleshooting. Use only for program diagnostics. It is displayed in **gray** (default: disabled).

Depending on how many options you select, the volume of outputs of a log file and in the Events Window will increase or fall. The use of debug information drastically reduces the processing speed of print jobs and may even lead to rejection of print jobs.

5.3.2.1.3 Logical Printers

Logical Printers allow print jobs that arrive at input port interfaces to be distributed to certain emulations and output port interfaces. All defined Logical Printers are listed in the Logical Printers list in the main window of the FORMS4WORK client.

The Logical Printers list contains all defined Logical Printers. In the simplest case, the Logical Printer list contains a single Logical Printer which assigns all print jobs from one input interface to one emulation for data conversion and one output to print the data.

Edit logical printer...
To edit the Logical Printer double click a selected row in the list or click the 'Edit Logical Printer...' button allows.

Add Logical Printer...

Click 'Add Logical Printer' button or select 'Add Logical Printer...' from the 'Setup' menu to add a Logical Printer (a new row) to the list.

Remove Logical Printer...

Click 'Remove Logical Printer' button or select 'Remove Logical Printer...' from the 'Setup' menu to remove a Logical Printer (the highlighted row) from the list.

Input interface

Shows the type and properties of the input port interfaces and also its description. Used to configure the input port for incoming print data.

Input Filter

Shows the input filters. Input filters compensate incompatibilities between the host and destination printing system or incorrectly formatted commands of character strings before the conversion.

Data conversion

Shows the name of the assigned emulation for data conversion (e.g. IPDS to PCL5) and also its description. Each emulation generally has different settings.

Output Filter

Shows the output filters. Output filters compensate incompatibilities between the host and destination printing system or incorrectly formatted commands of character strings after the conversion.

Output interface

Shows the type and further properties of the assigned output port interface and also its description. Used to configure the output for outgoing print data.

Edit Logical Printer

To edit a Logical Printer, double click on a selected row of the Logical Printers list or click the 'Edit Logical Printer...' button above the Logical Printers list.

The 'Edit Logical Printer' window allows to edit the logical printer, consisting of:

- Input Interface
- Condition of usage
- Emulation
- Output Interface

Input Interface

The required input interface for the print job is to be selected here. The list contains all the existing defined by the user.

Condition of usage

In keeping with the selected condition, the required criterion is to be selected or entered here.

Emulation

The required emulation for the print job is to be selected here. The list contains all the existing defined by the user.

Output Interface

The required output interface for the print job is to be selected here. The list contains all the existing defined by the user.

Destination/Device

- **Default device as configured in output port**

No specific destination address is to be defined; instead the default destination defined in the output is to be used.

- **Device as delivered by protocol**

Some input protocols supply a destination address in the data stream, at which the data are to be output. If, for example data are received using the LPD/LPR protocol, the data stream contains the name of the destination printer. If this is the actual name of the destination printer, it may be used. The destination device at which the print job is finally output is therefore not decided until the system is running.

If the destination address supplied by the protocol is a virtual output device that does not really exist. this option should not be selected. In this case, by selecting 'Default device as configured in output port' the default destination defined in the output must be used or another destination chosen by selecting 'Specific Device'.

- **Specific Device**

If this rule has been assigned to a specific output device, its name is displayed here. If a print job takes this route, the destination address defined in the output is overwritten and replaced by the name defined here. Depending on the output type you have selected, the appropriate destination address can be defined here.

File port – Definition of a file name
DOS device – Definition of a port, for example COM1:
Printer – Definition of a printer that must be installed in Windows
TCP/IP port – Definition of an IP address and IP port number

If, for example, the output is a file port, the name of the output file can be defined here. The file name defined in the file port is then ignored.

Use as default

If this Logical Printer is to be used as the default printer for all print jobs that do not comply with a criterion, this option is to be activated.

Only one Logical Printer can be marked as the default.

Test Logical Printer

A test job can be used to check the configuration of an emulation against the real printer. Additionally, by sending a test job to the printer or the attached output port interface, it is possible to test the communication between the output interface and the printer. There is no host system required while printing a test job.

While in started state, select one of the listed test jobs. This job will be processed as soon as you press the button 'Print'.
You can repeat this step as long as you do not leave this dialog using the 'Close' button.

5.3.2.2 Run conversion and job monitoring

Start

Click 'Start' button or select 'Start' from the 'File' menu to start FORMS4WORK. After it has been started successfully, FORMS4WORK will be able to receive print jobs for data conversion.

While running in conversion mode, Logical Printers can only be viewed, but not edited nor added nor removed.

Stop

Click 'Stop' button or select 'Stop' from the 'File' menu to stop FORMS4WORK from receiving print jobs.

In order to edit, add or remove a Logical Printer, the job conversion process must be stopped.

View Logical Printer

Click 'View Logical Printer' to view a Logical Printer. Select one from the list.

5.3.2.2.1 Job list

The Job list window is used to monitor and to manage print jobs. The list includes print jobs which are waiting to print or they already have been printed. For every item in the list further information is available:

- **Name:** shows job name. The name is extracted from the job itself or automatically created by FORMS4WORK.
- **Status:** shows job status. Possible entries are: Deleting, Error, Canceled, Printed, Printing (Byte), Held, Spooled, Connecting, Emulating, Receiving. Those entries can be added by: Paused, Delayed, Delayed until (Date, Time), Kept.
- **Converted**: shows number of converted pages.
- **Printed:** shows number of printed pages.
- **Size:** shows size of print job.
- **Created:** shows when print job has been created.

Job management for spooled jobs is available after selection via the context menu or the job menu. It is

possible to pause the printing of a job, to continue printing, to abort or re-start the print job.

Detailed information for a selected job are shown in the job properties frame on the right hand side.

Active Jobs

For every item in the Active Jobs list the following information is available:

- **Name:** shows job name. The name is extracted from the job itself or automatically created by FORMS4WORK.
- **Status:** shows job status. Possible entries are: Deleting, Error, Canceled, Printed, Printing (Byte), Held, Spooled, Connecting, Emulating, Receiving. Those entries can be added by: Paused, Delayed, Delayed until (Date, Time), Kept.
- **Converted**: shows number of converted pages.
- **Printed:** shows number of printed pages.
- **Size:** shows size of print job.
- **Created:** shows when print job has been created.

Job management for spooled jobs is available after selection via the context menu or the job menu. It is possible to pause the printing of a job, to continue printing, to abort or re-start the print job.

Detailed information for a selected job are shown in the job properties frame on the right hand side.

Printed Jobs

For every item in the Printed Jobs list the following information is available:

- **Date/Time:** shows the date and time when the job has been completely printed.
- **Name:** shows job name. The name is extracted from the job itself or automatically created by FORMS4WORK.
- **Status:** shows job status. Possible entries are: Deleting, Error, Canceled, Printed, Printing (Byte), Held, Spooled, Connecting, Emulating, Receiving. Those entries can be added by: Paused, Delayed, Delayed until (Date, Time), Kept.
- **Pages**: shows number of printed pages.
- **Printed:** shows number of printed pages.
- **Size:** shows size of print job.
- **User:** shows name of the user (client) who has printed the job.

Detailed information for a selected job are shown in the job properties frame on the right hand side.

5.3.2.2.2 Job Properties

Job Properties

The job properties window is a dynamic status display of the job currently selected in the job list frame. Besides the core job information, as its name, type, size, creation time and ownership, there are further dynamically updated information about its state and available actions.

To view and modify the properties of several jobs at once, highlight the respective jobs.

Depending on its status, the following actions are applicable for one or more jobs:

- **Print:** (re-)print the spooled job(s)

- **Advanced Reprint:** Reprint some or all pages of the spooled job(s) and/or redirect it to other printers
- **View:** viewing of job data
- **Redirect:** redirection of jobs from the last used device to a different device.
- **Schedule:** delay output of a print job to a specific date / time
- **Pause / Undo Pause:** pause or continue processing the job(s)
- **Keep / Undo Keep:** keep or remove the job(s)
- **Printed:** set or remove attribute 'printed' of the job
- **Delete:** delete the job(s)
- **Cancel:** cancel processing of the spooled job(s)
- **Input Trace File:** retrieve the file which contains the captured job data before the data have been converted by the emulation. This action is only available if the Data Monitoring option was active while processing job data.
- **Output Trace File:** retrieve the file which contains the captured job data after the data have been converted by the emulation. This action is only available if the Data Monitoring option was active while processing job data.

Only the actions are shown that can currently be applied.

Advanced Reprint

Define the pages of the job to reprint it or to send it to the original printer or an other destination or printer.

In the page ranges table first define a range starting with **From Page** and ending with **To Page** for the destination or printer. Depending on this range you can select an other printer to print the pages before the range start and to print the pages after the end of the range. Select <Skip> in the **Destination/Printer** column, if you do not want to print a range of pages.

Requirements for Advanced Reprint:

- Output Spooling must be enabled
- Login as Administrator or Operator
- Only available for PCL or ASCII data. Input Data Type Recognition must be enabled in Input Port to detect data as ASCII or PCL
- If using the Raw-Emulation the option Count Pages must be enabled.

5.3.2.3 Event view list

The lower part of the main window shows a list of events. The Event view list initially only shows the start time of the client after starting the application

As soon as a connection has been made to a FORMS4WORK Server, all the messages of the server and its active print processes will be shown in this frame. The message color coding indicates their order of significance. A distinction is made between the following levels:

- **Error** messages are shown in **red**.
- **Warning** messages are shown in **blue**.
- **Information** is issued in **black**.
- **Debug** messages are issued in **gray**.

See also Log Levels. You can control the types of messages to be given through the properties of the print process.

More messages also mean more system stress.

The event list shows the following criteria:

- **No.**: Incremental number of event
- **Date/Time**: Date and time when the event was logged
- **From**: Name of the component which logged the event
- **Event**: Textual information about the event

5.3.2.4 Menus

The main menu in the FORMS4WORK Client window contains the entries shown below which display menus with further entries. Frequently required menu actions can also be reached directly through the button bar below the main menu.

- File
- Job
- Setup
- Help

5.3.2.4.1 File

New...

Creates one (more) of the following:

- **Client Window**
  Opens new client window. An additional client window might be helpful if you are running more than one print process.
- **Print Process**
  Creates new print process. Enter a name for the new print process.
- **Desktop Shortcut**
  Creates a shortcut for the current print process on the Windows desktop. A desktop shortcut might be helpful if you are working with several print processes at the time.

Login...

Starts the dialog to build up the connection to the FORMS4WORK Server. The FORMS4WORK Server can be monitored or administrated, respectively, as soon as a connection has been made.

Start

Starts the print process with its Logical Printers for job conversion and printing.

Stop

Ends the print process. No further processing of the data is possible. Active print jobs are always processed completely before the print processes are ended. This can lead to delays when ending a print process.

Quit

Closes down FORMS4WORK Client, but doesn't stop a previously started print process.

5.3.2.4.2 Job

Print

Starts sending the selected print job to the output port interface.

As soon as the output is complete, the job will be deleted from the spooler. To prevent deletion, activate the 'Keep' option in the spooling options of this output interface. This is a general setting for all jobs on this output interface.

To prevent deletion of this job only without affecting the general settings, activate this option using the menu command 'Keep'.

Advanced Reprint

By using Reprint you can print some or all pages of spooled job(s) and/or redirect it to other printers

View

View job data. PCL and ASCII jobs will be viewed as Portable Document Format (PDF) files. This requires add-on software. Adobe® Acrobat® Reader™ is free software that lets you view and print PDF files. It can be downloaded directly from the Adobe website.
None PCL/ASCII jobs will be viewed in a special window containing a hexadecimal and ASCII display region.

Redirect

You can redirect the selected job(s) from the last used device to a different device. Redirection is available for spooled jobs only.

Schedule

The setting Print at offers a way to delay output of the print job to a specific date / time. The job is held until the specified date / time is reached.

By choosing Print as soon as possible, the print job will be delivered when its output port is not occupied.

To print a job manually, the option Hold must be selected. This means that the print job is not output until you select the Print command.

Pause

Suspends processing of the selected print job.

The job will not be sent to output even if the therefore defined time has reached. The job will not be deleted, even if the preset time to keep has passed.

If Pause is reset, the processing of the job is resumed, i.e. the job will be printed if its time for printing has been reached earlier or deleted if the time to keep has already passed.

Keep

Keeps selected print job in the spooler after sending it to the output port, until it will be manually deleted using menu entry 'Delete' or the attribute 'Keep' is reset.

Printed

Selected print jobs will be marked as printed. If a job was scheduled for printing, its time for printing will be reset and the job is kept in the spooler.

If Printed is reset, the job will be marked as 'Held, kept'.

Cancel

Stops processing of the selected print job. The 'Keep' attribute of a spooled job will be set automatically.

Delete

Stops output of the selected print job and deletes it. This function is available for spooled jobs only.

5.3.2.4.3 Setup

Edit Logical Printer...

Opens the 'Logical Printer' dialog for editing.

See edit Logical Printer.

Add Logical Printer...

Creates a new Logical Printer.

Click 'Add Logical Printer' button or select 'Add Logical Printer...' from the 'Setup' menu to add a Logical Printer (a new row) to the list.

See add Logical Printer.

Remove Logical Printer...

Removes the highlighted Logical Printer(s).

Click 'Remove Logical Printer' button or select 'Remove Logical Printer...' from the 'Setup' menu to remove a logical printer (the highlighted row) from the list. This may be necessary to add a new logical printer component.

Print process

Opens Print process options.

See print process.

You must have administrator access to use this function.

Server

Opens Server options.

See server.

Backup

Saves or restores a complete configuration of a FORMS4WORK Server.

The backup includes a ZIP compatible archive file of the entire configuration of the server and all log files.

5.3.2.4.4 Help

Index

Opens the FORMS4WORK online help with the index for information search by keywords.

Info

Displays version and copyright information for the FORMS4WORK application. Click on information window to return to the program.

5.3.2.5 Icon Bar

Gives fast access to the most important commands:

- Start Print Process
- Stop Print Process
- Edit Logical Printer
- Add Logical Printer
- Remove Logical Printer
- View Logical Printers
- Watch Print Devices

5.3.2.6 Print Process Bar

Shows the current print process with its Logical Printers and allows fast access to a print process via pull-down menu.

Choose one print process from the list and click "Go" to go to the chosen print process.

5.3.2.7 Watch Print Devices

The Print Device window is used to monitor printers as output devices, which are used by FORMS4WORK to process the print jobs. The required information can be gained by

- SNMP (Simple Network Management Protocol) with continuously polling of the printer or by
- PJL (Printer Job Language) messages send by the printer during the printing of a job.

The way used to gain information from the output devices is set at the Output Port Interfaces configuration.

In the windows list each printer is displayed as an item with a symbol. The color of the symbol indicates the printers state.

- Green The printer is available and ready
- Yellow Warning, i.g. low of paper
- Red Not available because i.g. offline
- White Unknown or not available

The state of a printer is detected by existing or missing state information delivered by the printer. States like i.g. 'low paper', 'out of paper', 'low toner', 'out of toner', 'door open', 'paper jam' and 'service required' can be signaled by the printer. If multiple conditions are signaled by a printer, the color of the printers symbol is signaling the most critical condition. If a printer i.g. signals 'low paper' (warning) and 'out of toner' (error), the symbol will be displayed in red color. If a printer signals 'low paper' (warning) and 'low toner' (warning), the symbol will be displayed in yellow color, because both conditions are warnings.

By double clicking a list entry, depending on the selected type of device monitoring, further information about a printer will be shown in a separate dialog. Printers monitored by SNMP are responding with a manufacturer dependent subset or all of the following types of information:

Information	Description
IP Address	IP address, assigned to the printer.
MAC Address	MAC address of the printers network interface.
Hostname	Name, assigned to the printer for DNS resolution.
Model Type	Manufacturer dependent model type description.
System Location	Location of the printer.
System Contact	Email contact of the printers administrator.
Impressions	Number of printed impressions during lifetime or since last power on of the printer.
Running since	Time when the printer was powered on.
Input Trays	The amount of paper available in the paper trays. Amount of paper is given in remaining percent as far as the printer is supporting this type of information.
Markers	The amount of toner available at the printer. Amount of toner is given in remaining percent as far as the printer is supporting this type of information.

Printers monitored using PJL do not deliver a unique structure of information. The amount and extent of information depends on manufacturer and model type.

6 Configuration

6.1 Introduction

Set up the FORMS4WORK Server

1. In the Main Window of the Client, open 'Setup' menu.
2. Click 'Server...'.
3. In the dialog configure the server options.

Set up a Print process

1. In the Main Window of the Client, open 'Setup' menu.
2. Click 'Print Process...'.
3. In the dialog configure the print process options.

Set up a Logical Printer

Define the Logical Printers using which the dispatcher distributes print jobs received by the FORMS4WORK system. The configuration dialog contains several sections that are described in detail in the following:

- Input Interface: allows you to add and set up the required input port interfaces for a Logical Printer within a print process.
- Input Filter: select and configure the input filters.
- Data Conversion: add and set up the required emulation for data conversion.
- Output Filter: select and configure the output filters.
- Output Interface: select and configure the output port interface.

6.2 Input Interfaces

6.2.1 Overview

Input interfaces are used as reception ports for print data. FORMS4WORK supports different types of inputs:

- Channel [ISA]
- Channel [PCI]
- System Devices
- ESCON
- Files
- LPD
- Novell
- ODBC
- POP3
- PPD
- SNA LU1/LU3
- SNA LU 6.2
- TCP/IP / Local TCP
- Twain

Parameters that are independent of the input type are described under the point headed Properties. Special parameters are listed under the relevant input type.

To define a new input

To define a new input interface in the system, select Properties in the context menu of a print process and go to the dialog page headed Input interface. On this page you can delete existing input interfaces by selecting Delete or reconfigure them by selecting Configure. By selecting Add, the user can add a new input interface. A list appears with the available input types, from which the required type must be selected. After this the configuration dialog for the selected interface type appears automatically.

All the inputs defined in this way are automatically activated and can receive data when the print process is started. Through which emulation the data pass and to which output they are finally sent is defined in the Logical Printer editor. In principle there is no direct link between an input and a certain output, but such a link may be created in the Logical Printer editor where print jobs can be assigned to defined outputs on the basis of various criteria.

6.2.2 Properties

6.2.2.1 Settings (Input Interface)

Buffer

- **Read block size**

Enter block size for read operations in KB.

When data are received, the data are read in blocks of the specified size as long as the input port supports this. With a file port, for example, the data are read and processed in blocks. The larger the block size, the fewer read access operations are required. A large block size, however, increases the memory requirement for job management.

Default: 32 KB

- **Maximum size of receive buffer**

Enter maximum size of the internal data buffer.

If the data that are received cannot be processed because, for example, the printer at the output is busy, the data are nevertheless accepted and placed in a buffer. This value defines the maximum size of this buffer. When the receive buffer is full, no more data can be accepted until the data can be processed and

the buffer is thus emptied. If no value is entered here, the size of the buffer is only limited by the available hard disk space. This setting is only available if 'Direct Read' is not activated.

Default: none (no entry possible)

- **Direct Read**

Enable to let the input data stream not be buffered and not be read directly from the input interface.

In most cases this setting will improve performance. If Channel Input is used in conjunction with very small block sizes, the time needed for storing the data in a buffer would affect performance negatively. In this case be sure that 'Direct Read' is activated. This setting is only available if no protocol is used.

Default: enabled

Timeouts

- **Read Timeout**

Enter timeout for data reception.

This value allows the time properties of FORMS4WORK for read operations to be influenced. This value should only be changed by experienced users.

Default: 50 msec

- **Write Timeout**

Enter timeout for data output.

This value allows the time properties of FORMS4WORK for write operations to be influenced. This value should only be changed by experienced users.

Default: 1000 msec

- **Delay, if data received**

Enter the time in milliseconds that a print job may be delayed in receiving data so that other print jobs can be completed fluently.

Print jobs that arrive at the same time are processed in parallel. Each print job is allocated a certain amount of processor time for this purpose, which it must share with other print jobs.

Default: 0 msec

- **Delay, if no data received**

Enter the time in milliseconds that a print job can be delayed if no data are currently being received for this print job.

If no data are currently being received for a print job, the print job may be delayed and the available processor time can be assigned to other print jobs.

Default: 10 msec

6.2.2.2 Sessions

Maximum of input sessions

Enter maximum number of input sessions.

When this number of sessions has been reached, further connection requests by a host are rejected until the number falls below the maximum level again. If no value is entered here or if 0 is entered, the number of sessions is unlimited.

Default: 10

Maximum of pending jobs

Enter maximum number of pending jobs.

When the maximum number of pending jobs has been reached, further print jobs will not be processed. If no value or 0 is entered here, there is no limit to the number of pending jobs.

If a very large number of print jobs is processed at the same time, this may have a major adverse effect on the system performance.

Default: 10

Session Timeout

Enter session timeout interval (in seconds).

If no data are received from a connection (for example a TCP/IP session) for a certain time, FORMS4WORK automatically terminates the connection. This time can be defined here (in seconds). No entry or a 0 in this field prevents the automatic termination of a connection at the input by FORMS4WORK.

Default: none (empty)

Job Timeout

Enter job timeout interval (in seconds).

If several print jobs arrive at a connection (for example a TCP/IP session) in sequence, FORMS4WORK may not recognize these as separate jobs. This may cause problems if, for example, the data are to be output through the PPD/PPR protocol since this protocol must have access to the complete print job before it is passed on to the printer. Therefore it is necessary to define a job timeout. If no data arrive at a connection for a certain period of time, the current print job is terminated. All further data that arrives at this connection will be assigned to a new print job. No entry or a 0 in this box will prevent print jobs from being split automatically.

Another possibility of splitting a continuous flow of data into individual print jobs is to simulate the end of the print job after a certain number of pages and to start a new print job with the following pages. This setting is a property of the emulation that must support it. The appropriate possible settings are given in the configuration dialogs of the emulations.

Default: empty (none)

Look for session every ...

Enter interval in milliseconds when input port shall monitor the input for receiving data (polling).

A file port, for example, checks the specified directory at regular intervals for new data so that it can then process them.

Frequent monitoring increases the workload of the computer. The value should therefore not be made too low. A higher value will only mean that a received job is identified a little later, so it is quite

acceptable for this value to be several seconds.

Default: 1000 msec

Job start sound

Define a job start sound.

At arrival of a print job a sound can be played. Therefore the name of a sound defined in the Control Panel, a wave file or '-1' for a short signal can be entered here. Leave this field empty for no sound.

Default: empty (no sound)

6.2.2.3 Data (Input Interface)

Decompress and decrypt data automatically

Enable to let FORMS4WORK decode compressed or encrypted data automatically that comes from another FORMS4WORK system.

Default: disabled

- **Password**

Enter password used by the other FORMS4WORK system.

Use job information within data stream
(when receiving data from a FORMS4WORK output interface)

Enable to let the input interface interpret additional job information.

If data is received from a FORMS4WORK output interface, additional information about a job (e.g. job name) can be transferred before the print data. If this option is enabled, the input interface interprets this information. To use this feature, the corresponding option of the output interface must also be checked.

Default: disabled

6.2.2.4 Data Type

Input Data Type Recognition

Active

Enable to either determine the type of the incoming data automatically or assign it manually to the data stream.

Default: disabled

- **Always Assume**

Set input data type to a certain incoming data stream.

If the type of the incoming data stream is known, there is no need to use the automatic detection. The data type can be set manually to a fix value here.

Default: disabled (only available when Active is enabled)

- **Auto Detect**

Select input data type(s) that shall be detected automatically.

The data type of the incoming data will be recognized automatically. Several types can be selected, for which the incoming data is tested. Because under some circumstances the real data type might not be recognized for sure, unused data types should be turned off to avoid misleading detection.

Default: disabled, no data tape selected (only available when Active is enabled)

6.2.2.5 Data Capturing (Input Interface)

Data Capturing

Data capturing allows to write incoming data to a file before the data is converted by the emulation. This feature should only be used for testing purposes because it slows down the system performance.

Active

Enable to log sent data.

Default directory for the log file is [FORMS4WORK application path]\DATA\DSPPATHx, default name of the log file is Ixxxx.DAT. Each job is placed in a separate file.

Default: disabled (not active)

- **Without protocol data / With protocol data**

Set if you want the protocol data to be saved to the log file, too.

Default: Without protocol data

- **Maximum files to capture**

Define the maximum number of files to be captured.

If the specified maximum number of files is reached, older files will be overwritten.

Default: 99

- **Maximum size (MB)**

Define the maximum number of megabytes per job to be captured.

Default: 0 (unlimited)

Maximum hours to keep

Files will be deleted after the specified number of hours.

Default: 720

- **Add job name to captured filename**

Enable if you want the job name to be added to the captured filename.

The job name will be added in parenthesis to the captured filename.

Default: enabled

6.2.3 Channel [ISA]

The selection of a Channel as an input interface open up a dialog with the following tabs:

Channel Input Device
Settings
Sessions
Data Type
Data Capturing

You can choose between 2 channel input devices.

6.2.3.1 Channel [ISA] (Input Port)

A channel input device must be installed on your FORMS4WORK server in order to work with this interface. To install device, execute ChannelInput.exe from the FORMS4WORK software package.

Options

Printer Emulation

Select a printer emulation from the pull-down menu.

Available printers are: IBM 3211, IBM 3825 (IPDS), IBM 4245, IBM 4248, IPDS Bridge, SNI 3338, SNI 3348, SNI 3365

Default: IBM 3211

This menu allows to select the type of printer which will be emulated by FORMS4WORK to the connected host on the channel interface.

The printers IBM 3211, IBM 4245, IBM 4248, SNI 3338/39 and SNI 3348 are fanfold impact printers which are equipped with exchangeable print bands.

The IBM 3825 is an IPDS printer. When using this emulation, the channel card makes a 'normal printer restart' after the start of the channel driver.

The IPDS Bridge works with the IBM 3825 driver but makes no 'normal printer restart' after the start of the channel driver.

The printer SNI 2050/2075/3365 are cut sheet laser printing systems which are able to print simplex/duplex from several paper trays and to stack the paper into different output trays. Besides those printers are able to use different fonts, forms and overlays when the required resources are stored on the printers' hard disk drive before.

Channel Address

Enter channel address in hexadecimal code.

The channel address identifies the byte address of the emulated printer which is used with channel protocol.

Default: AE (hex) for device 1, AF (hex) for device 2

Channel Timeout

Set timeout of the channel input device (in seconds).

Possible values: 0 - 300 sec

Default: 45 seconds

Don't stop channel input service when stopping print process

Enable to keep from stopping the channel input service when stopping a print process.

When enabled, the Windows NT device will not be automatically stopped when closing the input interface. If you are using two Channel Input devices, it is recommended to use this option for starting and stopping the devices independently.

Default: disabled (single device), enabled (two devices)

Ignore suppress out

Enable to ignore the 'suppress out' signal.

With channel connection there is a signal called 'Suppress Out'. The host computer is using this signal to inform the device that it should not activate the 'Request In' signal by itself. The 'Request In' signal usually is used by the device to inform the host computer about a pending state message.
If 'Suppress Out' is set by the host, the host informs about the inconvenience of state messages. Using the 'Ignore suppress out' switch may change the behavior of the FORMS4WORK Channel Input concerning the 'Suppress Out' signal set by the host computer.

Default: disabled

Strip channel commands

Enable to strip channel commands.

This switch controls whether PCC bytes (PCC = Printer Control Character), i.e. control commands for line feed and form feed, are passed to the emulation by the Channel Input or not. The Channel Emulation and the X-Metacode to PCL emulation are in need of these PCC Bytes, the IPDS to PCL emulation does not know about them because line feeds and form feeds are already present in the IPDS data.

Default: enabled

see also Settings

6.2.4 Channel [PCI]

The selection of a Channel as an input interface open up a dialog with the following tabs:

Channel Input Device
Settings
Sessions
Data Type
Data Capturing

You can choose between 2 channel input devices.

6.2.4.1 Channel [PCI] (Input Port)

A channel input device must be installed on your FORMS4WORK server in order to work with this interface.

Driver settings

Channel Timeout

Set timeout of the channel input device (in seconds).

Possible values: 0 - 300 sec

Default: 45 seconds

Don't stop channel input service when stopping print process

Enable to keep from stopping the channel input service when stopping a print process.

When enabled, the Windows NT device will not be automatically stopped when closing the input interface. If you are using two Channel Input devices, it is recommended to use this option for starting and stopping the devices independently.

Default: disabled (single device), enabled (two devices)

Options

Printer Emulation

Select a printer emulation from the pull-down menu.

Available printers are: IBM 3211, IBM 3203, IBM 3825 (IPDS), IBM 4245, IBM 4248, IPDS Bridge, SNI 3338, SNI 3348, SNI 3365

Default: IBM 3211

This menu allows to select the type of printer which will be emulated by FORMS4WORK to the connected host on the channel interface.

The printers IBM 3211, IBM 4245, IBM 4248, SNI 3338/39 and SNI 3348 are fanfold impact printers which are equipped with exchangeable print bands.

The IBM 3825 is an IPDS printer. When using this emulation, the channel card makes a 'normal printer restart' after the start of the channel driver.

The IPDS Bridge works with the IBM 3825 driver but makes no 'normal printer restart' after the start of the channel driver.

The printer SNI 2050/2075/3365 are cut sheet laser printing systems which are able to print simplex/duplex from several paper trays and to stack the paper into different output trays. Besides those printers are able to use different fonts, forms and overlays when the required resources are stored on the printers' hard disk drive before.

Channel Address

Enter channel address in hexadecimal code.

The channel address identifies the byte address of the emulated printer which is used with channel protocol.

Default: AE (hex) for device 1, AF (hex) for device 2

Strip channel commands

Enable to strip channel commands.

This switch controls whether PCC bytes (PCC = Printer Control Character), i.e. control commands for line feed and form feed, are passed to the emulation by the Channel Input or not. The Channel Emulation and the X-Metacode to PCL emulation are in need of these PCC Bytes, the IPDS to PCL emulation does not know about them because line feeds and form feeds are already present in the IPDS data.

Default: enabled

6.2.5 System Device

The selection of a System Device as an input interface open up a dialog with the following tabs:

Device
Settings
Sessions
Data
Data Type
Data Capturing

6.2.5.1 System Device (Input Port)

Device

Select required device or port from the pull-down menu.

The list contains all the known system devices on the system. If the required system device is not included in the list, it can be entered manually.

Default: no device selected (empty)

Queue sizes

Device-internal buffer size for receiving and sending data. If read errors occur when data are being received, it may be due to the fact that the data cannot be processed quickly enough which causes the device-internal buffer to overflow. In this case the input buffer size should be increased. The buffer size of the output is normally 0.

- **Input**

Enter device-internal buffer size for the Input.

Default: 128 KB

- **Output**

Enter device-internal buffer size for the Output.

Default: 0 KB

Serial Settings

Active

Enable to enter data for a serial connection (i.e. baud rate, number of data bits, parity, number of stop bits, and handshake method).

If the system device is not a serial device, this setting must not be activated.

- **Baud**

Select a baud rate from the pull-down menu.

Available rates: 4800 - 115200

Default: empty (none)

- **Databits**

Select the number of databits from the pull-down menu.

Available numbers: 5 - 8

Default: 8

- **Parity**

Select the parity from the pull-down menu.

Available values: none, odd, even, mark, space

Default: none

- **Stopbits**

Select the number of stopbits from the pull-down menu.

Available values: 1, 1.5, 2

Default: 1

- **Communication**

Select the handshake method from the pull-down menu.

Available values: none, RTS/CTS, RTS/CTS Handshake, RTS/CTS Toggle, XON/XOFF, unknown printer

Default: RTS/CTS Handshake

RTS/CTS handshake should be used wherever possible as the handshake method.

- **Communication = XON/XOFF**

If the XON/XOFF method is used, the XON and XOFF character should also be defined.

- XON-Limit

Enter the XON-Limit.

The XON limit defines the maximum number of bytes in the input buffer before the XON character is sent.

Default: 65535

- XOFF-Limit

Enter the XOFF-Limit.

The XOFF limit defines the maximum number of bytes in the input buffer before the XOFF character is sent.

Default: 65535

- XON-Character

Define the XON-Character.

Default: 17

- XOFF-Character

Define the XOFF-Character.

Default: 19

see also Settings

6.2.5.2 Protocol (Input System Device)

No suitable protocols are available for system devices.

6.2.6 ESCON

The selection of ESCON as input interface open up a dialog with the following tabs:

ESCON Input Device
Settings
Sessions
Data Type
Data Capturing

6.2.6.1 ESCON (Input)

Device

Define the ESCON device.

Default: \\.\ESCONIN-0

ESCON Address

Select ESCON address in hexadecimal code.

Default: 1A

Strip channel commands

Enable to strip channel commands.

This switch controls whether PCC bytes (PCC = Printer Control Character), i.e. control commands for line feed and form feed, are passed to the emulation by the ESCON Input or not. The Channel Emulation and the X-Metacode to PCL emulation are in need of these PCC Bytes, the IPDS to PCL emulation does not know about them because line feeds and form feeds are already present in the IPDS data.

Default: enabled

see also Settings

6.2.7 File

The selection of File as input interface open up a dialog with the following tabs:

File
Settings
Sessions
Data
Data Type
Data Capturing

6.2.7.1 File (Input)

Enter the file name from which the data is read.

Click on the button on the right-hand side to search for an Input Interface (pattern).

The input interface monitors the specified directory and starts to process the file as soon as it is available and not locked by another process.

It is also possible to enter wildcards. For example, if you enter 'C:\FORMS4WORK*.BIN', the system will process all files with the extension '.BIN' in the directory 'C:\FORMS4WORK'.

Several patterns, separated by semicolon, can be used. For example, 'C:\FORMS4WORK*.IN1;*.IN2;D:\INPUT*.IN3;*.IN4' will process all files having extensions '.IN1' and '.IN2' in the directory C:\FORMS4WORK and all files having extensions '.IN3' and '.IN4' in the directory 'D:\INPUT'.

Files can be excluded using a pattern starting with '^'. For example, '^*.txt' excludes all files ending with '.txt'.

FORMS4WORK remembers the last entry you have made.

see also Settings

6.2.7.2 Protocol (Input File Port)

No suitable protocols are available for file ports.

6.2.8 LPD

The selection of LPD as input interface open up a dialog with the following tabs:

LPD
Settings
Sessions
Data
Data Type
Data Capturing

6.2.8.1 Address (LPD Input)

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

Address

- **Local Address**

Define the local IP address or DNS name of the network interface that is to receive the data. If the computer has only one local address, the field may remain empty. If there are several local addresses, set the one that should be used by the Input Port.

Default: empty (none)

Normally this field can remain blank.

- **Port**

Define LPD port on which the data is to be received. With LPD connections using no protocol (direct socket) usually port 515 is used, although selection of the port is free.

Default: 515

Input Buffer Size

Define size of input buffer. This is the internal buffer size for storage purposes when data is received. If data arrives more quickly than it can be processed, it is placed in a buffer.

Default: 256 KB

see also Settings

6.2.8.2 Protocol (LPD Input)

LPD/LPR - Line Printer Daemon/Line Printer Remote printer protocol

6.2.9 Novell

The selection of Novell as input interface open up a dialog with the following tabs:

Novell
Settings
Sessions
Data Type
Data Capturing

6.2.9.1 Queue Polling (Novell Port)

The Netware Client 4.11a for Windows NT or higher from Novell Inc.® must be installed on the FORMS4WORK server system. You can not use the Netware Client from Windows NT!

FORMS4WORK's Novell Input Interface can service queues on a Netware server. Arriving jobs will be processed in a first-in-first-out basis. FORMS4WORK removes the jobs from the queue and sends it to an emulation and/or printer.

At first create the queues on the Netware server, which should be serviced by FORMS4WORK.

Then create a print server which is used by FORMS4WORK to access the queues. This print server has to be assigned to all queues which FORMS4WORK should serve. You may not want to assign other print servers to this queues.

The Print Server has to be configured in Novell® Netware™ bindery compatible mode.

For more specific instructions on creating queues and print servers see your Netware™ documentation.

Queue Polling

- **Tree / Server name**

Enter the name of the Netware server, which is maintaining queues to be served by FORMS4WORK.

- **Print server name**

Define the name of the print server that FORMS4WORK is using to access the server queues.

see also Settings

6.2.10 ODBC

The selection of ODBC as input interface open up a dialog with the following tabs:

ODBC
Sessions

6.2.10.1 ODBC

The source of data records is accessed as an ODBC data source. This has the advantage, that all database applications, which support this interface, may be used to request data. There's no difference if the data source is e.g. a local MS Access™ file or if you access a database server like SQL Server™ in your network. Any database product supporting ODBC may be used.

The only restriction is that all data required for printing of a job has to be available in one table. If your database table is organized with references to other tables, then you have to create a view using a join statement, which will create a logical table containing all required fields from several physical tables. See the documentation of your database application about views and joins.

Data Source

Define the database by selecting a data source name and a table name. A data source must be defined prior using the ODBC Manager. You may either start this applet by using the ODBC Manager button or using the system control applet for ODBC32. Open this applet and add a system or a user data source by defining the driver e.g. MS Access™ and specify the database file and the name of the data source. This name will be used as database name in the job definition tree.

- **Name**

This is the name of the data source as defined with the ODBC Manager applet.

- **User Name**

Enter the user name of the database account for access to the data source.

- **Password**

Enter the password of the database account for access to the data source.

- **ODBC Manager...**

Open the ODBC Manager to add, change or remove data source definitions.

- **Connect**

Establish a connection to the data source defined by the parameters. This is mandatory to view tables

Data Table

- **Table**

Select an existing table or enter the name of a database table to be accessed. You may also use wildcards as part of the name as e.g. 'JobId_*' or 'Data_Set_???'. The asterisk stands for any number of unknown characters; the question mark represents one single unknown character.

- **Report data to later components**

If enabled, the data records retrieved from the data source are sent as print job data to any emulation configured with this input port. Otherwise, the emulation is only informed about new records and needs to access the data source by itself.

Default: disabled

- **Delete records after processing**

If enabled after successful output the detected data records are deleted from the database table. Otherwise all records are left and the data table is continuously growing.

Default: enabled

- **Delete table**

If enabled after successful output the detected database table is deleted from the data source. Otherwise the table is left and the data records may be optionally deleted.

Default: disabled

- **Wait x seconds before processing new records**

This value defines a time period. As long as no new records are added to matching tables, this input port assumes the end of any inserts and starts processing the newly added records.

Default: 15 sec

6.2.11 Parallel Input

The selection of Parallel as input interface open up a dialog with the following tabs:

Parallel
Settings
Sessions
Data
Data Type
Data Capturing

6.2.11.1 Parallel (Input System Device)

Device

Select required system device or port from the pull-down menu.

The list contains all the known system devices on the system. If the required system device is not included in the list, it can be entered manually.

Default: \\.\WT12101

For more information on the Parallel Input Device see the documentation of your parallel input card.

6.2.12 POP3

The selection of POP3 as input interface open up a dialog with the following tabs:

POP3
Settings
Sessions
Data
Data Type
Data Capturing

6.2.12.1 POP3 Input

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

FORMS4WORK is able to receive print jobs as emails from a mail server. To do this, a POP3 account has to be prepared on a mail server using POP3 protocol. All the required parameters to access these print jobs are entered on this dialog page:

Mail Account (POP3)

- **Hostname**

Enter hostname or IP address of the mail server on which an account has been prepared for receiving print jobs. If a hostname is entered here instead of an IP address, resolving via DNS must be guaranteed.

Default: empty (none)

- **Port**

Enter TCP port which is to be used for communication with the mail server. Usually port 110 is used, but others are possible.

Default: 110

The required TCP port is defined by the mail server.

- **Username**

Enter username of the POP3 account at the mail server.

Default: empty (none)

- **Password**

Enter password of the POP3 account at the mail server.

Default: empty (none)

Print job data must be send as attachment in MIME or UUENCODED format. In the mail body definitions for parameters of the print job can be added by using keywords. Each keyword is assigned a value:

```
<Keyword>=Value
```

An assignment as shown above must be entered within one line. The following keywords are supported:

JOBNAME
Name of the print job as FORMS4WORK should uses.

DESTINATION
Destination where the print job should be sent to. You can uses this parameter for definition of rules with rule type 'Destination Port/Queue'.

USER
Name of the users which the print job should be assigned to.

EXECUTION
Defines the time at which the print job should be printed. The defined value must be given in the following format:

```
Day.Month.Year Hour:Minute[:Second] [UTC]
```

The number of seconds can be dropped. If `UTC` is not added, the time according to he local system time of the FORMS4WORK Servers will be used.

DELAY
Defines an amount of time by which the output of the print job should be delayed. The value can be specified using the format '<x> <unit>', where '<x>' is a integer and the unit is defined by one of the keywords 'sec', 'hour', 'hours', 'day', 'days'.

Settings

- **Print mail text and attachments**

Select to process mail text and attachments as print jobs.

- **Print only mail text**

Select to process only the mail text as a print job. Attachments will be disregarded.

- **Print only attachments**

Select to process only attachments as print jobs. Mail text will be disregarded.
This is the default setting.

- **Include header information**

Enable to add header information of the mail before the mail text. This option is only available if 'Print mail text and attachments' or 'Print only mail text' is activated.

Default: disabled

- **Don't delete mails from server**

Enable to keep mails on the mail server after they are processed. After a restart of FORMS4WORK Server all mails residing on the mail server will be processed again. Therefore mails should be deleted from the mail server manually or by another software after they are processed.

Default: disabled

see also Settings

6.2.13 PPD

The selection of LPD as input interface open up a dialog with the following tabs:

PPD
Settings
Sessions
Data
Data Type
Data Capturing

6.2.13.1 Address (PPD Input)

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

Address

- **Local Address**

Define the local IP address or DNS name of the network interface that is used to receive the data. If the computer has only one local address, the field may remain blank. If there are multiple local addresses, you can limit to a single IP address. Leaving it blank in such a case makes FORMS4WORK receive data from all IP addresses.

Default: empty (use all available IP addresses)

- **Port**

Define PPD port on which the data is to be received. With PPD connections using no protocol (direct socket) usually port 5001 is used, although selection of the port is free.

Default: 5001

Input Buffer Size

Define size of input buffer. This is the internal buffer size for storage purposes when data is received. If data arrives more quickly than it can be processed, it is placed in a buffer.

Default: 256 KB

see also Settings

6.2.13.2 Protocol (PPD Input)

PPD/PPR- AFP/IPDS printer protocoll

6.2.14 SNA LU1/LU3

The selection of SNA LU1/LU3 as input interface open up a dialog with the following tabs:

SNA LU1/LU3
Settings
Sessions
Data Type
Data Capturing

6.2.14.1 SNA LU1/LU3 Connection

The Microsoft DLC protocol must be installed on the FORMS4WORK server!

SNA Connection

Host MAC Address

Define MAC address of the host system from which data is accepted.

Ask your network administrator for the correct Host MAC address.

Default: empty (none)

IDBLK

Set the IBM product number (Hex) which defines the type of the control unit and of the attached devices. This value must refer to the VTAM definition at host side. For IBM printers InfoPrint 60, 3130, 3160, 3935 use value 071.

Possible range is 000 to FFF

Default: 017

IDNUM

Define the unique identification (Hex) of the control unit. It must be in conjunction with IDBLK the XID value and refer to the VTAM definition at host side.

Possible range is 00000 to FFFFF.

Default: empty (none)

Adapter

Set the logical adapter number of the network interface in the FORMS4WORK Server system, which is to be used for communication with the host system. If there is only one network interface, this value is to be set to 0. With several interfaces installed, here you decide which one is to be used by the input port.

Default: 0

Connect timeout

Set the connection timeout (in seconds). After this interval is elapsed without having established a connection, the FORMS4WORK client is no longer searching for a connection. An error message is displayed.

Default: 30 seconds

Retry connect after

Set the time (in seconds) after which the port will try again to get a connection.

Default: 30 seconds

see also Settings

6.2.14.2 Protocol (SNA Port LU1/LU3)

SNA LU1 / LU3 - Systems Network Architecture Protocol for Logical Units

6.2.15 SNA LU 6.2

The selection of SNA LU6.2 as input interface open up a dialog with the following tabs:

SNA LU6.2
Settings
Sessions
Data Type
Data Capturing

6.2.15.1 SNA LU 6.2 Connection

The Microsoft DLC protocol must be installed on the FORMS4WORK server!

Host MAC Address

Define MAC address of the host system from which data is accepted.

Ask your network administrator for the correct Host MAC address.

Default: empty (none)

IDBLK

Set the IBM product number (Hex) which defines the type of the control unit and of the attached devices. This value must refer to the VTAM definition at host side. For IBM printers InfoPrint 60, 3130, 3160, 3935 use value 071.

Possible range is 000 to FFF.

Default: 017

IDNUM

Define the unique identification (Hex) of the control unit. It must be in conjunction with IDBLK the XID value and refer to the VTAM definition at host side.

Possible range is 00000 to FFFFF.

Default: empty (none)

Adapter

Set the logical adapter number of the network interface in the FORMS4WORK Server system, which is to be used for communication with the host system. If there is only one network interface, this value is to be set to 0. With several interfaces installed, here you decide which one is to be used by the input port.

Default: 0

Connect timeout

Set the connection timeout (in seconds). After this interval is elapsed without having established a connection, the FORMS4WORK client is no longer searching for a connection. An error message is displayed.

Default: 30 seconds

Retry connect after

Set the time (in seconds) after which the port will try again to get a connection.

Default: 30 seconds

Remote Network Identifier

Define the name of the network in which the printer resides. For AS/400 hosts use 'APPN'.

Default: empty (none)

Remote Control Point

Define the name the host is using for its application control point. For AS/400 hosts set the name of the controller to be configured.

Default: empty (none)

see also Settings

6.2.15.2 Protocol (SNA Port LU 6.2)

SNA LU 6.2 (together with SNA port)

6.2.16 TCP/IP

The selection of TCP/IP as input interface open up a dialog with the following tabs:

TCP/IP
Settings
Sessions
Data
Data Type
Data Capturing

6.2.16.1 Address (TCP/IP Input)

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

Local Address

Define the local IP address of the network interface that is used to receive the data. If the computer has only one local address, the field may remain blank. For a computer with multiple network interfaces or multiple IP addresses, you can limit to a single IP address. Leaving it blank in such a case makes FORMS4WORK receive data from all IP addresses.

Default: empty (use all available IP addresses)

Port

Define TCP port on which the data is to be received. With TCP/IP connections using no protocol (direct socket) usually port 9100 is used, although selection of the port is free.

If the incoming data was sent by a FORMS4WORK Local TCP Output Port, be sure to activate the Decompress and decrypt data automatically option.

Default: 9100

Input Buffer Size

Define size of input buffer. This is the internal buffer size for storage purposes when data is received. If data arrives more quickly than it can be processed, it is placed in a buffer.

Default: 256 KB

see also Settings

6.2.16.2 Protocol (TCP/IP Input)

- **LPD**/LPR - Line Printer Daemon/Line Printer Remote printer protocol
- **PPD**/PPR - AFP/IPDS printer protocoll
- **PJL** - Printer Job Language for status readback

6.2.17 Twain

The selection of Twain as an input interface open up a dialog with the following tabs:

Twain Input
Settings
Sessions
Data Type
Data Capturing

6.2.17.1 Twain (Input Port)

Twain Source

Selects the Twain Source / scanner.

All scans in a single job

All Twain scans will be collected in a single job. If a is defined, the job will automatically splitted.
If disabled, every Twain scan job will result in a single FORMS4WORK job.

Default: disabled

A Twain job may contain several pages if supported by the Twain source.

Show user interface of the Twain Source

The user interface of the selected Twain Source will be shown before the scan starts. This user interface is supplied by the manufacturer of the scanner and is not part of FORMS4WORK. In this user interface various parameter can be defined. If it is supported by the scanner, the number of pages to scan can also be defined.

Default: enabled

Maximum number of scan images in buffer

Memory buffer for scanned images. If the buffer is filled, scanning will be delayed until the images are printed.

Default: 5

6.3 Emulations

6.3.1 Introduction

FORMS4WORK offers the following emulations for the conversion of print data:

- Barcode Label Software
- Chained Emulations
- Channel Emulation
- Comparex Line Mode
- Forms Overlay Language
- IGP to PCL
- IPDS to PCL5 (Color)
- IPDS to PDF (Color)
- Job Controller
- PCL to PDF
- PCL5 to X-Metacode (Color)
- Prescribe to PCL
- Program Interface
- Raw to Raw
- XES to PCL5
- X-Metacode to PCL5 (Color)

Filters can be placed before or after each emulation (input filters, output filters). This allows incompatibilities between the host and destination printing system or incorrectly formatted commands of character strings before and after the conversion to be compensated by the emulation.

6.3.2 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

Bidirectional Communication

- **Produce ACK/NAK responses**

Enable to produce ACK/NAK responses.

When processing print jobs, which are received through a Channel Input Port and when processing IPDS print jobs, usually it is necessary to send feedback responses to the host system. In other situations these responses might not be applicable. For highest flexibility it can be controlled by this option whether feedback responses are send to the host system or not.

Default: enabled

- **Send stop code to host after writing <n> sec**

Define when stop code is sent to host after writing (in seconds).

This applies if a write access to the printer is not successfully completed within this time. Some hosts require responses within a specific time. If for some reason the printer goes offline or is turned off this might lead to problems with bi-directional communication.

Set to 0 to turn off this option.

Default: 0 (off)

The effective time depends on the write timeout set at the output port. I.e. if at the output port a write timeout is set to 10 sec and here 15 sec are used, the second timeout after 20 sec will send the stop code. This is because the first timeout after 10 sec is still in valid range of 15 sec.

6.3.3 Resources

Settings regarding the resource files to be loaded into the printer can be made here.

Resource download for the IPDS to PCL5 emulation
Resource download for the PCL5 to PDF emulation
Resource download for the PCL5 to X-Metacode emulation
Resource download for the XES to PCL5 emulation
Resource download for the X-Metacode to PCL5 emulation

6.3.4 Barcode Label Software

6.3.4.1 Overview

For documentation of FORMS4WORK Barcode Label Software please see the Barcode Label Software Manual which is a separate document.

6.3.5 Chained Emulations

6.3.5.1 Overview

Under certain circumstances it might be helpful to pass multiple emulations. For example you want to translate IPDS to PDF and there is no emulation available for. In this case you would first translate IPDS to PCL5 and after that PCL5 to PDF which requires two emulations.

To solve this case you have to define and configure the two emulations first. By definition of a 3rd emulation of type Chained Emulations they will be chained.

Only already defined and configured emulations are available in the pull-down menu.

First emulation

Select an already defined emulation from the pull-down menu which should be passed first.

Second emulation

Select an already defined emulation from the pull-down menu which should be passed last.

6.3.6 Channel Emulation

6.3.6.1 Overview

This section describes all the parameters of the FORMS4WORK Channel Emulation.

The configuration dialog for the Channel Emulation has the following property pages (tabs):

- Printer Type
- Translation Table
- Control Codes
- Bold Printing
- Download
- FCB
- Job End Detection
- Performance
- Band ID

6.3.6.2 Parameters

6.3.6.2.1 Printer Type

Channel Input Port Assignment

- **Use Channel Input**

Select the appropriate Channel Input Device from the pull-down menu.

Selection is possible only if a channel device is physically attached to the FORMS4WORK server.

- **Printer Emulation**

Shows the type of the emulated channel printer. This option is set with the corresponding Channel Input Device.

Selection is possible only if a channel device is physically attached to the FORMS4WORK server.

- **Ignore UCS**

Enable to ignore UCS.

Only available if printer type SNI 3338/39 is selected in the Printer Emulation field. It allows to setup FORMS4WORK to ignore the parity of the printer's Universal Character Set Buffer.

Output

- **Type**

Select an output type from the pull-down menu.

It allows to select the type of printer which is really connected to FORMS4WORK. The type of output also determines the available tabs in the Channel Emulation Properties dialog.

Available options are:
- Centralized Channel 3203-5
- Centralized Channel 3211
- Decentralized with CR/LF, FF
- Decentralized with PC-Code

Default: Decentralized with CR/LF, FF

Centralized Channel 3203-05 specifies a centralized Printer IBM 3203-05 which is equipped with a channel interface. This output type is only designed for use when FORMS4WORK is connected to a Siemens mainframe with operating system BS2000 and the converter emulates either the printers SNI 3338/39 or

SNI 3348.

When selected, a check box **Data Check** is available.
Enable Data Check to verify data for each code is printable.

Default: disabled

When selected, the **UCS Control File** (path, file name) is shown below.

Centralized Channel 3211 is similar to Channel 3203. The length of the Universal Character Set Buffer is different to the UCSB of a IBM 3203-5. For this output type no data checking is designed.

Decentralized with CR/LF, FF is used as a synonym for de-centralized printers which are equipped with either parallel Centronics, or serial RS232, or LAN interfaces.

When this output type is selected FORMS4WORK converts paper advance information of the received channel commands into the appropriate number of printer control codes (pcc) (carriage return CR, line feed LF and form feed FF). The output data stream has the following format:

```
data, pcc
```

The print data will be converted as specified in section Translation Table.

Decentralized with PC-Code is similar to ASCII. In contrast to the ASCII mode FORMS4WORK will not convert the received channel commands into the appropriate number of printer control codes (carriage return, line feed and form feed) but will include the channel command byte in the output data stream to the connected printer. The output data stream has the following format:

```
pcc, data, delimiter
```

The pcc byte represents the channel command byte and a carriage return (x'0D') and a line feed (x'0A') are used as delimiter. The print data will be converted as specified in section Translation Table. The selection of this output type requires a printer which can interpret the pcc byte.

VFU

This option defines the advance control (VFU = Vertical Format Unit) of the emulation. It is only available with Decentralized with CR/LF, FF as output type.

The following types are available:
- None
- EVFU
- ESC

Default: None

None can be used with all page printers. The print system does not receive any information about form length. The information included in the Forms Control Buffer (FCB) will only be stored in the emulation. All advance commands received via the channel interface will be converted into the corresponding number of Carriage Return, Line Feed and Form Feed.

EVFU supports a paper advance control format (EVFU = Electronical Vertical Format Unit) commonly known as 'P-series'. This VFU format does not require the signal line Paper Instruction (PI). Form length as well as channel codes included will be loaded into the EVFU memory of the printer. After that the lines containing channel codes can be directly addressed by control codes in range of 10(hex) to 1B(hex) during print operation. An EVFU load cycle starts and ends with special control codes and requires one byte for every print line of the form.

ESC is nearly identical to None. In contrast the printer gets information about the length of the used form by an Escape string. To obtain the highest possible compatibility to various printers, the sequence can be modified, except the values representing the length of the form. To do this, modify the following parameters. As an example, values to define the command 'ESC&lxxF' are given where xx is the required format of the value for form length:

When ESC is selected, three options are available:
- String Header
- Format Of Length Information
- String Trailer

- **String Header**

Define the prefix of the command string, i.g. for 'ESC&l' enter '%1b%26%6c' or '%1b&l' here.

- **Format Of Length Information**

Define the format of the value required by the printer.

Available options:
- Decimal 3 digits
- Decimal 2 digits
- Hexadecimal

Default: Decimal 3 digits

- **String Trailer**

Define the suffix of the command string, e.g. 'F'

6.3.6.2.2 Band ID

Band ID

- **EBCDIC**

The print characters of impact printers are on a steel print band. Many print bands for different character sets and national languages are available. The print band moves across the print line. When the desired print character is at the correct position, the hammer for that position strikes to print the character. Each print band has an unique ID, called Band ID. The host system has to informed about this Band ID to recognize which print band is currently mounted on the printer.

Default: 00000000

6.3.6.2.3 Translation Table

Choose translation

Select a translation.

Available options are:
- No Translation
- EBCDIC to ASCII

Default: No Translation

The code set of data used on a channel interface is normally EBCDIC. Depending on the requirements of the printing system which is really connected to FORMS4WORK the data codes can pass FORMS4WORK in a transparent way or can be converted to ASCII.

- **No Translation**

Select No Translation for a code conversion table where the default settings keep all codes untouched.

If necessary, modify the translation table using the button Edit.

- **EBCDIC to ASCII**

Select EBCDIC to ASCII to convert all received data codes to ASCII.

If necessary, modify the translation table using the button Edit.

6.3.6.2.4 Control Codes

Control Codes (hexadecimal)

This group includes the settings of the control codes form feed (FF), carriage return (CR) and line feed (CR/LF). Here you can specify the hexadecimal codes being used by FORMS4WORK in the output data stream to perform the paper advance of the connected printer.

- **FF Control Code**

Enter the corresponding control code.

Default: 0C

- **CR Control Code**

Enter the corresponding control code.

Default: 0D

- **CR/LF Control Code**

Enter the corresponding control code.

Default: 0A

- **Ignore Space**

Enter the space characters that shall be ignored.

When this switch is activated by defining the hexadecimal code of the space character used by the host FORMS4WORK will reduce the resulting output data stream by those space characters, where the content of the whole print line consists only of this single space character.

Default: empty (none)

Lines Per Inch

This feature allows to change the printers line density between 6 and 8 LPI (lines per inches) controlled by the host system, if the connected printer supports such a function. For that two control strings have to be defined. Depending on the line density of the Forms Control Buffer (FCB) loaded from the host the related one will be transferred to the connected printer.

- **Escape Sequence 6 lpi**

Enter the Escape Sequence for 6 lines per inch.

- **Escape Sequence 8 lpi**

Enter the Escape Sequence for 8 lines per inch.

- **Default LPI**

Select the default lpi setting from the pull-down menu.

This option will define the default LPI setting used by FORMS4WORK as long as there is no FCB loaded from the host. If there were control strings defined the one related to the default setting will be transferred after every start of the dispatcher.

Default: 6

Page Turn Over

Select the page turn over either by line feed (LF) or by form feed (FF).

Default: by FF

These options allow to control the transition from the bottom of a page to the top of the next page.

Normally, FORMS4WORK converts all received channel commands into the appropriate number of carriage returns, line feeds and form feeds. But when the connected printer is a cut sheet printer the alteration of the font size will result in a different line capacity of the page. This problem can be solved if FORMS4WORK uses a form-feed command instead of a line-feed command to leave the bottom of the form.

BS 2000

Available only when BS2000 is used.

- **Channel 12 Conversion to FF**

This check box allows to control a special feature designed for the Siemens printer emulations SNI 3338/39, SNI 3348 and SNI 3365 (SNI2050).

The print spooler of OS2000 uses Channel 12 of a Forms Control Buffer (FCB) as the bottom of a form, generally. Page turnings between header/trailer pages and the print jobs will be performed by the channel commands x'E3' (Skip to channel 12 immediate) followed by the command x'09' (Write and space 1 line) where the print line contains 1 single space character.

Enable to make FORMS4WORK convert the described command sequence into a single form feed command in the output data stream.

Otherwise depending on the actual line counter FORMS4WORK will perform the appropriate number of line feeds to arrive bottom of form before the top of the next page will be arrived with the subsequent write command.

Default: disabled

6.3.6.2.5 Bold Printing

This section includes different converter functions to emphasize text during printing. Impact printers like those emulated by FORMS4WORK can emphasize text by over-printing the same line several times only. Depending on the technology this method would not provide the same results on a laser printer.

To get the same effect on laser printers this text must be printed a second time slightly horizontally shifted or using a bold font instead. The third solution of FORMS4WORK allows a combination of underlining text and/or making text non-recognizable and/or bold printing text.

As soon as a channel command x'01' (Write without spacing) was received the content of that line will be compared with the following print line. Depending on the selected bold printing mode FORMS4WORK will insert both at the beginning and at the end of matching contents the specified control strings.

Bold Printing Mode

Select a bold printing mode from the pull-down menu.

Dependent to the selected mode it might be necessary to define additional fields.

Available options are:
- None

- Bold Font
- Pixelshift
- Attribute

None - This selection will disable the bold mode function.

Bold Font - This selection requires to define 2 control strings which let the printer use a bold font or re-select the normal font.

Pixelshift - This selection requires to define 2 control strings which let the printer start and terminate the pixel shift mode. Often it is not necessary to define a terminating control string because of auto termination at the end of the print line.

Attribute - When this mode is selected, the following parameters are available and must be defined:

- Bold on (e.g. `1B28733342`)
- Bold off (e.g. `1B28732D3342`)
- Underline on (e.g. `1B266444`)
- Underline off (e.g. `1B266440`)
- Underline character (e.g. `6D` (EBCDIC '_'))
- Overprint character (e.g. `58` (ASCII 'X'))

The used examples are escape control strings known by a HP LaserJet printer.

There are three print attributes: bold, underline and overprint i.e. making text unrecognizable. These attributes can be used in any combination. The received data (normally EBCDIC) will be scanned for the code specified as Underline Character to recognize which part of the line should be underlined. Overprint Character must contain the code which is used in the output data stream (normally ASCII) to make text unrecognizable.

Example: '.' is used for a space character (blank)

```
1st line: CMD: 01
Normal.Bold.Bold.&.Underline.Over.Over.&.Under
2nd line: CMD: 01
.......Bold.Bold.&.Underline.YYYY.YYYYYYYYYYY
3rd line: CMD: 09
............_________________......___________
```

will cause the following print line:

```
Normal Bold Bold & Underline XXXX XXXXXXXXXXX
```

'Y' was exchanged by the specified Overprint Character (e.g. `X`) because being unequal to neither the original content nor the Underline Character nor the space character.

6.3.6.2.6 Download

This section includes two special features which can be useful in some cases.

Font & Graphic Download

Enable or disable font and graphic download.

Default: disabled

Normally, FORMS4WORK converts all received print commands into the appropriate number of carriage control codes like carriage return (0D), line feed (0A), form feed (0C). This mode was designed to allow downloads of data streams which have to be composed by several print lines because they will exceed the maximum length of a print line. But the different parts must not be separated by those carriage control codes, normally generated by FORMS4WORK because of the channel commands. When the download mode is enabled the suppression of generated control codes can be switched on and off by control strings included in the data stream.

This selection requires to define 2 control strings which let the printer activate or de-activate the download

function. Both control strings have to be at the beginning of a print line for being recognized by FORMS4WORK.

- **Download start (Hex)**

Enter control string to let the printer activate the download function.

Default: 50506F6F7BD6D5

- **Download end (Hex)**

Enter control string to let the printer de-activate the download function.

Default: 50506F6F7BD6C6

Bypass

Enable or disable bypass.

Default: disabled

All control strings known by a connected printer can definitely arrive to the printer using the so-called bypass function, even if the they include non-printable codes. Usage of this function secures that all nonprintable codes will not be converted neither from the spooler nor from FORMS4WORK, though that the sequence remains intact. This function is also very useful if the input of the codes cannot be done in hexadecimal notation and the desired code is not related to any key of the keyboard.

For the bypass function one printable code of the character set will be appointed to be an indicator for performing the function. The receipt of the specified bypass code instructs FORMS4WORK to combine the following two print characters to one hexadecimal code before the print line will be transferred to the printer. However, this can only be done, if the bypass character is followed by either numerals from 0 to 9 or letters from A to F where the letters are not case sensitive.

- **Bypass Character (Hex)**

Enter bypass character in hexadecimal code.

If there are used two bypass characters one directly behind the other, FORMS4WORK will combine all subsequent print characters to hexadecimal codes up to the line's end if the string is not terminated by another bypass character before. This procedure allows to transmit even longer control strings to the printer in a comfortable way.

If one of both characters which shall be combined is not within 0 to 9 and A to F, in case of a single bypass the function will not be executed, in case of a bypass string the function will be terminated at the failing position.

6.3.6.2.7 FCB

Forms Control Buffer

All line printers which can be emulated by FORMS4WORK on the channel interface to the host are equipped with a forms control buffer (FCB). There the information about form length, line density and vertical tabulators is stored when loaded from the host. This buffer shall copy the 12-channel tape controlled vertical format unit of older printers. The definition of channel codes for any line makes possible direct addressing of those lines by appropriate advance commands. The buffer has a maximum length of 255 bytes, where each byte is related to one line of the form.

- **Ignore FCB**

Enable to ignore forms control buffer.

Default: disabled

When this check box is enabled FORMS4WORK will not verify received advance commands that will address to a channel stop, if the desired channel stop is available in the FCB in use. When this option is disabled FORMS4WORK will report a data check status to the host when the desired channel stop is not specified in the FCB in use.

- **Suppress FCB**

Enable to suppress forms control buffer.

Default: disabled

When the check box Suppress FCB is enabled all FCBs loaded from the host will be ignored. When this function is disabled any FCB loaded from the host will be accepted and used.

Suppress FCB is only available when Ignore FCB is enabled.

- **Extended FCB**

Enable for extended forms control buffer function.

Default: disabled

Dependent on the used forms the length of a FCB normally will not have the whole capacity possible (a 12 inches form has 72 lines when 6 lines per inches (LPI) density are used or 96 lines when 8 LPI are used). If the system programmer is able to modify the FCBs of the host to append further information behind the termination byte, this option can be used to download these extended FCB information to the connected printer. This function allows to perform different pre-settings of the printer depending on the used form.

With activation of Extended FCB FCBs containing the following parameters are supported:

`0x1E10` ('control string of indefinite length in ASCII' `0x1F10`)
`0x1E11` ('1 byte of columns to suppress, 1 byte of lines to suppress' `0x1F11`)
`0x1E12` ('name of job max. 16 bytes in ASCII' `0x1F12`)
`0x1E13` ('name of print queue max. 16 bytes in ASCII' `0x1F13`)

All information enclosed by the bytes `1E10` and `1F10` will be transferred in a transparent way to the connected printer.

The information enclosed by the bytes `1E11` and `1F11` will cause FORMS4WORK to strip the specified number of columns from the beginning of each print line (1st byte, decimal counter), and/or to strip the specified number of print lines from the beginning of each page (2nd byte, decimal counter).

Both parameters enclosed by the bytes `1E12`/`1F12` and `1E13`/`1F13` are only designed for a connected network printer and will cause FORMS4WORK to use the desired job name inside the network protocol and send this job to the desired printer queue.

- **Resend FCB**

Enable to resend forms control buffer.

Default: disabled

This option is related to both functions Extended FCB and Lines Per Inch (see section Control Codes). When this check box is enabled FORMS4WORK will perform all functions and actions related to the load of the FCB. All the extended information included in the used FCB will be transferred to the printer at the beginning of each job (jobs separated either by Job End Detection or Job Timeout) even when there was no FCB loaded from the host since the last FCB load.

- **Default FCB**

Enable to set default forms control buffer.

Default: disabled

Enter a file name and path or search for it with the '...' button.

When this check box is enabled FORMS4WORK will perform an initial load of the FCB with the information stored in a file on hard disk drive every time when a print process which includes a channel emulation is started.

If the check box Suppress FCB is disabled this default FCB will be replaced by any FCB loaded from the host. If Suppress FCB is enabled the default FCB will never be replaced but all loaded FCBs will be ignored instead.

6.3.6.2.8 Job Management

Job End Detection

Because the data stream which will arrive to the line printers emulated by FORMS4WORK will not have an universal indication for an end of job there exists a timeout to terminate a print job. But when there are several print jobs in the spooler of the host the different jobs will not be separated by the timeout. Therefore FORMS4WORK offers different methods for job separation.

- **Method**

Select a job end detection method from the pull-down menu.

The following options are available:
- None
- Download End
- Skip 12
- Job End
- Job Start
- Load FCB

Default: None

None disables the job separation function. A job which was started on the channel interface will be terminated by a timeout value, only. This job timeout must be defined in the settings of the Input Port.

Download End requires the activation of the Download Mode option. When being selected, every receipt of the 'Download-end' string will cause an end of job.

Skip 12 will perform a job separation after the receipt of a special channel command sequence used by the Siemens operating system BS2000.

The print spooler of BS2000 uses Channel 12 of a Forms Control Buffer (FCB) as the bottom of a form, generally. Page turnings between header/trailer pages and the print jobs will be performed by the channel commands `x'E3'` (Skip to channel 12 immediate) followed by the command `x'09'` (Write and space 1 line) where the print line contains 1 single space character. When this method is activated FORMS4WORK will terminate a print job immediately after the receipt of that sequence.

Job End allows the definition of a text string as an indicator for an end of job. Additional parameters are available to specify a Column Offset where to search in a print line or to suppress the text string itself to prevent the string from being printed. If the text string to search for is not the last text on the page there is another parameter that will instruct FORMS4WORK to wait until the end of that page.

Selecting Job End makes the following parameters available:

- **Suppress Job End Sequence**

Enable to suppress Job End Sequence.

Default: disabled

- **Wait 'End of Page'**

Default: disabled

- **Job End Sequence (Hex)**

Enter Job End Sequence in hexadecimal code.

- **Sequence Offset**

Enter Sequence Offset.

Job Start is similar to Job End. The selection of this method allows the definition of a text string as an indicator for the beginning of job. Additional parameters are available to specify a Column Offset where to search in a print line or to suppress the text string itself to prevent the string from being printed.

Load FCB allows a job separation by every FCB load from the host. If the host always will send a Forms Control Buffer before each job this method can be used for job separation.

Job Name

A Host is able to send a job name or job identification within the print job data. If such an information is present, FORMS4WORK can extract that information and pass it on to its own spooling system.

- **Extract job name from data stream**

With this option, the job name might be extracted out of the banner or job separator pages.

- **Trigger**

The trigger is a constant character sequence which precedes the variable job name in the banner page. You would describe this e.g. as a field descriptor. The trigger string has to be on the same line as the job name and before the job name.

- **Cut Offset**

This is the number of character positions (columns) between the last character of the trigger string and the first character of the job name.

- **Cut Length**

This defines the length of the job name, exactly it describes how many characters starting from the cut offset after the trigger string should be used for the job name.

Example: The banner page looks like this:

```
*****START*****START*****START*****
*
* JOBID.......:  JOB08207
* JOB NAME....:  MYJOBNAME
* USERID......:  THEUSER
* SYSOUT CLASS:  M
*
*****START*****START*****START*****
```

To extract the job name, the trigger would be set to 'JOBID'. Since the Job name here e.g. JOB08207 is eight characters long and starts ten characters after 'JOBID', the cut offset would be set to 10 and the cut length to 8.

A trigger 'JOBID.......:' (with colon) and a cut offset of 9 would also work

6.3.6.2.9 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

Bidirectional Communication

- **Produce ACK/NAK responses**

Enable to produce ACK/NAK responses.

When processing print jobs, which are received through a Channel Input Port and when processing IPDS print jobs, usually it is necessary to send feedback responses to the host system. In other situations these responses might not be applicable. For highest flexibility it can be controlled by this option whether feedback responses are send to the host system or not.

Default: enabled

- **Send stop code to host after writing <n> sec**

Define the time in seconds after which a stop code ist send to the host.

This applies if a write access to the printer is not successfully completed within this time. Some hosts require responses within a specific time. If for some reason the printer goes offline or is turned off this might lead to problems with bi-directional communication.

Set to 0 to turn off this option.

Default: 0 (off)

The effective time depends on the write timeout set at the output port. I.e. if at the output port a write timeout is set to 10 sec and here 15 sec are used, the second timeout after 20 sec will send the stop code. This is because the first timeout after 10 sec is still in valid range of 15 sec.

Jobs

- **Split Job after <n> pages**

Enter the page number after which the job shall be split.

Default: 0 (no splitting)

- **reconfigure printer after splitting**

Enable to reconfigure the printer after splitting.

Default: disabled

6.3.7 Forms Overlay Language

6.3.7.1 Overview

The FOL™ to PCL5 emulation from FORMS4WORK converts print data that were created in the FOL™ printer language, so that they can be output on PCL5 compatible page printers. All the parameters are default values. They are in use until their values are overridden from FOL™ commands in the print data stream.

FOL™ stands for 'Form and Overlay Language'. FOL™ is a page description language, developed by Océ™, to control the printing process in digital printing environments. In combination with Océ™'s 'Job Automation Control' (JAC™), which is also included in the FOL to PCL5 emulation of FORMS4WORK, FOL™ is a powerful, easy-to-use tool for the formatting of line printer data and ASCII data streams.

The description of the FOL™ and JAC™ language is included in the ‚Océ 9200 Series Programmer's Guide', which is available from Océ™.

6.3.7.2 Parameter

6.3.7.2.1 Printer Capabilities

Printer

- **Type**

Select printer type from the pull-down menu.

The selection of the parameters type and output allows the adaptation of the PCL5 data stream, generated from the emulation, to the requirements of special printer types.

Default: HD Digimaster

- **Output**

Select output from the pull-down menu.

Default: PCL5

Printer Operation

Fine-tuning of the created PCL5 data stream can be done here.

- **Copies by printer**

Enable to generate copies of a print data stream by the printer. Disable to generate copies of a print data stream by the emulation.

Default: disabled

- **Collate**

Enable for collated copies.

Default: enabled

This selection switches between collated and non-collated copy generation. If collate is enabled, copies of the print data stream will be generated on a 'per job' basis, otherwise copies of the print data stream will be generated on a 'per page' basis.

- **Change sign of registration offset on duplex backside**

Enable to change sign of registration offset on duplex backside.

Default: disabled

Some printers move print data on duplex back pages to the wrong direction. This switch will reverse the movements on duplex back pages.

- **Send FOL forms as PCL macros**

Enable to send FOL forms as PCL macros.

Default: enabled

- **Full page mode**

Enable to print data from edge to edge.

Default: enabled

In Full page mode data can be printed from edge to edge on the page, if the printer supports this feature. Otherwise an unprintable margin of some millimeters remains on each printed page (dependent on the type of printer).

- **PCL Graphics Compression**

Enter PCL graphics compression.

Default: 3

The compressing method of the raster graphics in the PCL5 data stream can be configured here.

PJL

- **Use PJL**

Enable to use PJL.

Default: enabled

Controls the integration of PJL (Printer Job Language) instructions in the PCL5 data stream, produced by the FOL to PCL emulation. These instructions are used for example to control the finishing of the print jobs.

- **Set PJL resolution**

Enable to set PJL resolution and select a resolution from the pull-down menu.

Default: disabled
Default resolution: 300 dpi

With this option, the printing resolution of the target printer can be configured.
Available resolutions are: 100, 150, 200, 300, 600, 1200, 2400

Job step default action

The finishing options of the print jobs like stitching, stapling etc. can be configured here.

- **enable**

Enable one or more of the following options:
- Jog
- Staple
- Staple Flag Sheet

Jog activates the job based jogging of print jobs.

Default: enabled

Staple activates the job based stapling of print jobs.

Default: enabled

Staple Flag Sheet: Enabling this option will jog and staple the flag sheet of a print job together with the rest of the print job, disabling this option will do an extra jogging and no stapling of the flag sheet page.

Default: disabled

- **at ‚Process' label**

Enable one or more of the following options:
- Jog
- Staple

Jog controls the jogging of print jobs while processing a ‚process' label of a FOL control file.

Default: disabled

Staple controls the stapling of print jobs while processing a ‚process' label of a FOL control file.

Default: disabled

- **at ‚Separation' mark**

Enable one or more of the following options:
- Jog
- Staple

Jog controls the jogging of print jobs while processing a ‚separation` mark of a FOL control file.

Default: disabled

Staple controls the stapling of print jobs while processing a ‚separation` mark of a FOL control file.

Default: disabled

at ‚Segmentation' mark

Enable one or more of the following options:
- Jog
- Staple

Jog controls the jogging of print jobs while processing a ‚segmentation' mark of a FOL control file.

Default: disabled

Staple controls the stapling of print jobs while processing a ‚segmentation' mark of a FOL control file.

Default: disabled

6.3.7.2.2 Paper

Input tray mapping

The allocation of FOL tray assignments to the appropriate PCL tray assignments can be made here.

- **Host tray #**

Enter the number of the respective FOL input tray.

Up to 24 different tray allocations are possible (0 - 23).

Default: 0

- **PCL tray ID**

Enter the ID number of the associated PCL input tray.

- **Registration Offset [mm]**

This option can be used to compensate printer inaccuracies while feeding paper. A tray-dependent offset in millimeters for moving the print data on the page can be configured here.

Horizontal: enter horizontal offset.

Default: 0.00 (mm)

Vertical: enter vertical offset.

Default: 0.00 (mm)

Output bin mapping

The allocation of the FOL output bin assignments to the appropriate PCL output bin assignments can be made here.

- **Host bin #**

Enter the number of the respective FOL output bin.

Up to 24 different tray allocations are possible (0 - 23).

Default: 0

- **PCL bin ID**

Enter the ID number of the associated PCL output bin.

Paper Size [mm]

All adjustments for the configuration of the default paper size can be done here.

- **Type**

Select type of default paper size.

Available paper sizes are:
Standard: Executive, Letter, Legal, Ledger, A5, A4, A3, B5
User defined: User defined, User defined2, User defined3.

The respective paper size appears in the fields 'Width' and 'Height'.

Width: enter paper width in mm.

Height: enter paper height in mm.

- **Printable Area Offset**

Horizontal: enter offset in millimeters, which the printable area of the paper deviates from the left edge of the page.

Vertical: enter offset in millimeters, which the printable area of the paper deviates from the top edge of the page.

- **PCL ID**

Define the PCL identification number of the selected paper size.

- **Paper Assignment...**

Opens a configuration dialog for the allocation of FOL paper name to PCL paper specifications. User definable FOL paper names can be assigned to specified PCL paper sizes. Additionally a media name can be configured.

See Paper Assignment for details.

Orientation

Page orientation

Select a default page orientation from the pull-down menu.

Available options are:
- Portrait
- Landscape
- Reverse Portrait
- Reverse Landscape

Paper Assignment

Define logical papers in this dialog.

User defined name

Enter a name for the paper size.

Paper Size

Select a paper size from the pull-down menu.

Host Input Tray #

Enter number of host input tray that contains the paper.

Printer Media Name

Enter the printer media name.

Add

Click on 'Add' to add the above defined paper name assignment to the list below.

Remove

Click on 'Remove' to remove the highlighted entry from the list below.

Edit...

Click on 'Edit' to edit the highlighted entry in the list below.

A dialog appears where you can edit
- User defined name
- Paper Size
- Host Input Tray #
- Printer Media Name

Back to Paper

6.3.7.2.3 Page Properties

In this configuration dialog all page-related default adjustments can be done.

Duplex

- **Default Mode**

Select a default mode from the pull-down menu.

Available options are:
- Simplex
- Long edge duplex
- Short edge duplex

Default: Simplex

- **Force Duplex mode**

Enable to force duplex mode.

Enabling this feature will convert a simplex and duplex mixed print job to a complete duplex print job. Formerly simplex pages are converted now to duplex pages with empty backsides. This option must be set if a printer doesn't support switching between simplex and duplex pages inside a print job.

Default: disabled

- **Page Turnover**

Select a page turnover method.

Available options:
- Duplex Side Selection
- Form Feed

Default: Duplex Side Selection

Default margins [mm]

Enter the adjustments of the default page margins in millimeters.

Available margins:
- Top
- Left
- Right
- Bottom

Default: 0.00 (all)

Bulk text

- **Wrap text lines after position**

Enter number of column after which the emulation will do an automatic carriage return and linefeed.

Default: 512

- **Wrap page after line**

Enter number of lines after which the emulation will do an automatic form feed.

Default: 256

- **Cursor start horizontal [mm]**

Define the initial horizontal cursor position on the page in millimeters.

Default: 0

- **Cursor start vertical**

Indicates the initial vertical cursor position on the page in millimeters.

Default: 0

Graphics line width [µm]

Define the default width of graphic lines in micrometers.

Default: 24

Copies (default)

Define the default number of copies of a print job.

Default: 1

Allow empty pages

Enable to allow empty pages.

Default: disabled

6.3.7.2.4 Fonts

FOL Font substitution

In this dialog the allocations between FOL fonts and appropriate PCL5 fonts are made.

- **FOL Font name**

Enter a FOL font name or select one from the pull-down menu.

Pre-defined options:
- line printer
- univers

Default: line printer

- **PCL Typeface ID**

Enter the PCL typeface ID.

Default: 4102

- **Spacing**

Select the character width from the pull-down menu.

Available options:
- Fixed
- Proportional

Default: Fixed

- **Symbol Set #**

Enter the number of the symbol set, i.e. the ID of the PCL character set of the selected font.

Default: 277

- **Size adjustment**

Enter a balance factor to the character width.

Default: 0.75

- **Add**

Click on 'Add' to apply the new settings.

- **Remove**

Select a FOL Font name and click on 'Remove' to delete the selected font allocation.

You can undo this deletion by clicking 'Cancel'.

- **Change**

Select a FOL Font name and click on 'Change' to modify an already configured font allocation.

This will overwrite existing font parameters.

Edit default font...

All assignments of the default font can be changed in this configuration dialog.

See Edit default font... for details.

Edit Default Font

PCL Typeface ID

Enter the PCL typeface ID.

Default: 4099

Spacing

Select the character width from the pull-down menu.

Available options:
- Fixed
- Proportional

Default: Fixed

Pitch

Define the horizontal distances between characters of fixed spaced fonts. The value must be entered in number of characters per inch.

Default: 10

Height

Define the character height in points (1 / 72 inch) of proportional spaced fonts.

Default: 10

Stroke

Select the stroke of the font from the pull-down menu.

Available options are: Ultra Thin, Extra Thin, Thin, Extra Light, Light, Demi Light, Semi Light, Medium, Semi Bold, Demi Bold, Bold, Extra Bold, Black, Extra Black, Ultra Black

Default: Medium

Style

Select the style of the font from the pull-down menu.

Available styles are: Upright, Condensed Italic, Italic, Condensed, Compressed, Expanded, Outline Shadowed, Outline, Inline, Shadowed

Default: Upright

Symbol Set #

Enter the number of the symbol set, i.e. the ID of the PCL character set of the selected font.

Default: 277

Back to Fonts

6.3.7.2.5 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32768 Bytes

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32768 Bytes

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

6.3.7.2.6 Resources

Resource Path

Define the path from where the PCL5 to PDF emulation can access resources like fonts, etc.

Each FOL to PCL emulation has its own directory for storing emulation-specific resources. The FOL files for describing job layouts, forms, flag sheets etc will be stored in this directory.

Separation Information file

Define the file and path where a separation information file (extension .SIF) is stored. This file contains information and criteria for separating print jobs. The FOL to PCL emulation uses this file for dynamic job separation.

Ticket name from job data header

Enable to receive ticket name from job data header.

Default: disabled

Applies only with a channel emulation before the FOL emulation. There you can add the corresponding ticket name from the LCL into the first line (header) of the data stream.

Example:

Get ticket name from job header, if there is a channel emulation with SNI3365 upstream, e.g. $$TCK01234$$.

The channel emulation (SNI3365 / IPDS Commands) should be set to:
* "Suppress" / "New LCL Command: Replace"
* String header: $$TCK
* Format of Length Information: Decimal 5 Digits
* String Trailer: $$

6.3.8 Forms Processor

6.3.8.1 Overview

The Forms Processor emulation is producing form jobs by adding user data to pre-designed forms. Therefore form jobs need to be designed using the FORMS4WORK Form Builder and saved to file. These files the are selected during configuration of the Forms Processor emulation. Data records to be filled into the forms are received from an ODBC database via the ODBC input port.

6.3.8.2 Parameters

6.3.8.2.1 Miscellaneous

Banner Page

- **Add banner page to each group**

When printing, you might want to have a banner page at the beginning of each group. This page contains information about the job, data source and record range as also about the group position within the complete job.

To add banner pages, check this option and specify a paper tray to be used for these pages. The following is a sample of a banner page.

Default: disabled

```
FORMS4WORK - GROUP BANNER PAGE
------------------------------------------------

Job Definition  : Sample.SampleData
Data Source Name: SampleData
Data Table Name : Address


Job Information:
------------------------------------------------

Start Record ID : 000001
End   Record ID : 000031


Group Information:
------------------------------------------------

Group No.       : 00001 of 00002

Start Record ID : 000001
End   Record ID : 000020

------------------------------------------------
```

- **Use paper tray**

When printing with banner pages option set, here you select the paper tray to be used for the banner pages. Tray number 0 is the printers default tray. The selected paper tray should almost contain plain paper.

Default: Tray 0

Sheets

- **Always reduce number of sheet copies to one**

If this option is set, all sheets defined in your current job definition are printed only once, even if their copy count is defined higher. This allows performing a single copy print without modifying your job definition.

Default: disabled

- **Max. paper stack size per group**

To post process printed output on a cutter, you might have to keep the limit of sheets given by the cutter. Specify this limit as paper stack size per group here to get the complete output divided into groups your cutter can handle. The smallest possible value is the number of sheets in a set.

On the printing device each group will be treated as a separate job. The job names will be numbered as e.g. Sample.SampleData_1, Sample.SampleData_2, etc..

Additionally the number of sheets in a set is displayed as also the number of sheets required for printing all tables not yet printed.

Default: 0 (disabled)

Search external images within directories

Images, which are not part of the image list, can be loaded from one or more central image repository. This is just a directory, which contains all available images. Several of such directories can be listed in the image search path, separated by semicolons.

Default: empty

Job Definitions...

This opens the dialog for configuration of the form job definitions. You may have several job definitions configured. Each of them may have one or more conditions, when this definition is to be used.

All conditions are tested for their appliance by the top down priority.

6.3.8.2.2 Printer

Printer Adjustment

- **Unit Of Measurement**

The unit used for entering values of printer adjustment you may select here. Available are inch, centimeters and millimeters.

- **Horizontal Adjustment**

This value adjusts horizontal positioning of printing. This might be necessary for duplex printing to assure the pieces on frontside are congruent with pieces on backside. Enter a positive value to shift right or a negative value to shift left.

Default: 0

Printing on backside is more right than on frontside.
Increase positive value until congruent.

Printing on backside is more left than on frontside.
Increase negative value until congruent.

- **Vertical Adjustment**

This value adjusts vertical positioning of printing. This might be necessary for duplex printing to assure the pieces on frontside are congruent with pieces on backside. Enter a positive value to shift down or a negative value to shift up.

Default: 0

Printing on backside is lower than on frontside.
Increase positive value until congruent.

Printing on backside is higher than on frontside.
Increase negative value until congruent.

Inserter Trays

The Heidelberg Digimaster 91xx inserter option supports 3 trays of paper from which pre-printed sheets may be drawn and inserted to a job without printing on them. The trays are addressed via PCL as tray 71 to 73.

Here you may map each of these trays to one of the 30 trays available in the job definition. As soon as one of these mapped trays is to be used the required tray command for the inserter is generated.

Setting a tray to '0' is turning off this single inserter tray.

Default: 0 (disabled)

6.3.8.2.3 Job Definitions

In this dialog the form job definitions can be configured. You may have several job definitions configured. Each of them may have one or more conditions, when this definition is to be used.

All conditions are tested for their appliance by the top down priority.

6.3.9 IPDS to PCL5

see IPDS to PCL Properties inside chapter IPDS to PDF emulation.

6.3.10 IPDS to PDF

6.3.10.1 Overview

The IPDS to PDF emulation of FORMS4WORK allows printers which support PDF to be connected to an IBM host system in the form of IPDS compatible printers.

IPDS (Intelligent Printer Data Stream) is a development of IBM, which stands for the current high demands on print quality. It allows output that is made up of various data types, for example text, matrix images, vector graphics and bar codes.

For an optimum emulation performance the IPDS to PDF emulation in FORMS4WORK is split in two emulations:

- IPDS to PCL emulation
- PCL to PDF emulation

This allows to set important PCL parameters, thus allowing more possibilities to optimize the emulation to individual conditions and environments.

The PCL5 to PDF emulation converts print data that were converted from IPDS to PCL so that they can be output on PDF compatible page printers.

6.3.10.2 Parameters

6.3.10.2.1 IPDS to PCL Emulation

Overview

The IPDS to PCL emulation of FORMS4WORK allows printers which support PCL to be connected to an IBM host system in the form of IPDS compatible printers.

IPDS (Intelligent Printer Data Stream) is a development of IBM, which stands for the current high demands on print quality. It allows output that is made up of various data types, for example text, matrix images, vector graphics and bar codes.

The IPDS emulation allows the FORMS4WORK to act in the capacity of an IPDS compatible printer with the following features:

- APA (All-Points-Addressable) prints for text, graphics, matrix images and bar codes at any point within the printable area of a page.
- Printing text in many variations by changing the character set and print direction within a page.
- The use of images and vector graphics to show line drawings, cake and bar graphs, technical drawings, logos, tables and signatures.
- Loading character sets.
- The use of overlays, in other words the storage of forms and letterheads, which are always printed with the same defined appearance.
- The use of page segments, in other words the storage of text, which is always printed in the same style as the remainder of the page.
- Printing of various types of bar codes.
- Printing with almost arbitrary page orientation and print directions.

The IPDS capabilities depend directly on the Host software version and its IPDS functionality.

Parameters

Printer Type

Select the printer type from the pull down menu.

These settings always represent a group of printers. For example, the 3812 stands for all printers that have a resolution of 240 x 240 dpi and use the simplex method. If you have a printer of this type and cannot find it among those in parameter 4, enter 3812. In the same way, 3916 stands for a 300 x 300 dpi duplex printer that is not on the list.

If the printer you use is not included on the list below, and the use of the appropriate type class does not produce the results you require, please contact your service partner.

Printer type	Advertised default resolution (dpi)	Plex type	Remarks
3812 (or types with 240 x 240 simplex)	240	Simplex	Advertises resident fonts
4028 (or types with 300 x 300 simplex)	300	Simplex/Duplex	For duplex operation, set "mod" to 18; Printer advertises resident fonts
4224	144	Simplex	Use for line printer data (to replace dot matrix printers); Printer advertises resident font
3816 (or types with 240 x 240 duplex)	240	Duplex	Advertises resident fonts
3916 (or types with 300 x 300 duplex)	300	Duplex	Advertises resident fonts
3825-240	240	Duplex	Printer does not advertise resident fonts
3825-300	300	Duplex	Printer does not advertise resident fonts
3116	300	Duplex	
3827-240	240	Duplex	Same as 3825-240, only advertised ID differs
3827-300	300	Duplex	Same as 3825-300, only advertised ID differs
PRN4000	300	Duplex	Advertises extended color capabilities and outline download font capability
PRN4001	300	Duplex	Advertises extended color capabilities, FS4x and outline download font capability
3935	240/300/600 see remark	Duplex	Set default dpi manually; Can be used to replace compatible printer running in 3935 mode
4234	240	Simplex	Use for line printer data with simple graphics (to replace dot matrix printers, more features than 4224); Printer advertises resident fonts

Default: PRN4000

Default dpi

Set the printer resolution (in dots per inch, dpi) for the selected IPDS printer type. Possible resolutions are: 240, 300, 600 dpi.

Default: 'Printer default', that means default resolution of the selected IPDS printer type.

Variable dpi

If set, emulation advertises to the host that it can handle 240, 300 and 600 DPI simultaneously in addition to the printer model's default resolution.

Default: disabled

Plex mode

Printer default, Simplex, Duplex.

Default: 'Printer default'

ID number / Model number

Select an arbitrary ID and model number in variant to the selected Printer Type. If ID number and Model number are both set to 0 (default), the printer ID will not be changed by the emulation.

Default: 0 (ID number / Model number)

Example:

You would like to use features of the 3825/300 printer emulation. On your host system there is already a connection for an IBM 3830 model 1 configured. Enter the value '3380' as ID number and the value '1' as Model number. As soon as the host system sends a 'Sense type and model' request, FORMS4WORK will report a 3830 printer model 1 supporting features of the 3825/300 dpi emulation.

IOCA FS

This overrides the IOCA Function Set ID value reported to the host system during registration. Use only after consulting support.

Possible values include Printer default, 10, 11, 42 and 45.

Default: Printer default

Paper Type

Select the paper type. Possible values are

- Cut sheet
- Fanfold

If Fanfold is selected, IPDS reports the paper size with swapped Xm and Ym axes to the host system. This is necessary for laser printers with fanfold stock and simulates an inadequacy in IPDS of industrial standard printers.

Use this setting if you wish to print landscape jobs in portrait format or vice versa. The correct orientation of the axes is taken into account for the internal calculations.

Default: Cut sheet

Suppress Mark Form

Enable to suppress mark form.

The IPDS mark form command prints a fixed IPDS overlay from the host, marking the beginning and the end of a print job. This option suppresses the marking. A typical case for the use of the mark form command are fanfold printers.

Default: disabled

Output Bin Mapping

IPDS print jobs contain host identifications (ID) for the destination of the media, i.e. the output tray. PCL printers do only support output to trays 1 and 2 as a standard. The Output Bin Mapping option now enables to assign other output trays to the media destination IDs. If the IPDS data stream does not

contain any media destination command, the printer uses the default output tray.

Code Page

Select the code page.

This parameter controls the use of the correct code page for the EBCDIC data stream from the host system if no other code page has been selected in the IPDS instructions.
Select the appropriate code page from the following possible values for the correct conversion of umlauts and special symbols:

- 9 - Old Icelandic
- 7 - USA/Canada - CECP
- 8 - US/International ASCII
- 56 - Dp: International Set 5
- 59 - Symbols, Set 7
- 60 - Canadian French
- 73 - Germany F.R./Austria - CECP
- 74 - Belgium - CECP
- 75 - Brazil - CECP
- 276 - Canada (French) - 94
- 277 - Denmark/Norway - CECP
- 278 - Finland/Sweden - CECP
- 280 - Italy- CECP
- 281 - Japan (Latin) - CECP
- 282 - Portugal - CECP
- 283 - Spain
- 284 - Spain/Latin America - CECP
- 285 - United Kingdom - CECP
- 286 - Austria/Germany
- 287 - Denmark/Norway
- 288 - Finland/Sweden
- 289 - Spain
- 290 - Japan (Katakana)
- 293 - Apl (USA)
- 297 - France - CECP
- 310 - Graphic Escape Apl/Tn
- 340 - 4224 Resident Code Page
- 361 - International Set 5
- 363 - Symbols, Set 8
- 367 - ASCII
- 382 - Austria, Germany, Switzerland
- 383 - Belgium
- 384 - Brazil
- 385 - Canada (French)
- 386 - Denmark/Norway
- 387 - Sweden/Finland
- 388 - France, Switzerland
- 389 - Italy, Switzerland (Italian)
- 390 - Japan (Latin)
- 391 - Portugal
- 392 - Spain/Philippines
- 393 - Latin America (Spanish)
- 394 - U.K., Austral., Ire., H.K., N.Z.
- 395 - United States, Canada (English)
- 396 - Dw/370 Sonoran Serif
- 420 - Arabic Bilingual
- 423 - Greece - 183
- 424 - Israel (Hebrew)
- 437 - Personal Computer
- 500 - International #5
- 803 - Hebrew Character Set A
- 813 - Greece - ISO/ASCII 8-Bit
- 819 - Latin1 ISO/ANSI 8-Bit
- 829 - Math Symbols

- 831 - Portugal
- 836 - Peoples Republic Of China (Prc)
- 838 - Thailand
- 850 - PC Multilingual
- 851 - Greek PC
- 852 - Latin2 Multilingual PC
- 853 - Latin3 PC
- 855 - Cyrillic PC
- 856 - Hebrew PC
- 857 - Latin5 PC
- 858 - Multilingual Latin I (850 + Euro)
- 860 - Portugal PC
- 861 - Iceland PC
- 862 - Hebrew PC
- 863 - Canadian French - PC
- 864 - Arabic PC
- 865 - Nordic PC
- 866 - Cyrillic #2 PC
- 869 - Greece PC
- 870 - Latin2 Multilingual
- 871 - Iceland - CECP
- 874 - Thailand PC
- 875 - Greece
- 880 - Cyrillic Multilingual
- 890 - Yugoslavia
- 892 - OCR-A, 4234/3812, Palomar
- 893 - OCR-B, 4234/3812, Palomar
- 897 - Japan PC #1
- 899 - Symbols, Set 7 ASCII
- 903 - Peoples Republic Of China - PC
- 904 - Republic Of China (Roc) - PC
- 905 - Latin3 Multilingual
- 912 - Latin2 ISO/ANSI 8-Bit
- 914 - Latin4 ISO/ANSI 8-Bit
- 915 - Cyrillic ISO/ASCII 8-Bit
- 916 - Hebrew ISO/ASCII 8-Bit
- 920 - Latin5 ISO/ANSI 8-Bit
- 1002 - Dcf Rel 2 Compatibility
- 1003 - U.S. Text Subset
- 1004 - Ibm PC Desktop Publishing
- 1008 - Arabic ISO/ASCII 8-Bit
- 1025 - Cyrillic Multilingual
- 1026 - Latin5
- 1027 - Japanese (Latin) Extended
- 1028 - Hebrew Publishing
- 1029 - Arabic Extended ISO/Acsii 8-Bit
- 1038 - Symbols, Adobe ASCII
- 1039 - Gml List Symbols
- 1041 - Japanese Extended - PC
- 1042 - Simplified Chinese Extended - PC
- 1043 - Traditional Chinese Extended PC
- 1046 - Arabic Extended ISO/ASCII 8-Bit
- 1068 - Text With Numeric Spacing
- 1069 - Latin4 EBCDIC
- 1070 - Dp: United States
- 1071 - Dp: Germany/Austria
- 1072 - Dp: Belgium
- 1073 - Dp: Brazil
- 1074 - Dp: Denmark/Norway
- 1075 - Dp: Sweden/Finland
- 1076 - Dp: Italy
- 1077 - Dp: Japan (Latin)
- 1078 - Dp: Portugal
- 1079 - Dp: Latin America (Spanish)
- 1080 - Dp: United Kingdom
- 1081 - Dp: France

- 1087 - Symbols, Adobe
- 1091 - Symbol Set 7, Modified
- 1092 - Symbol Set 7, Modified - PC
- 1140 - U.S./Canada (37 + Euro)
- 1141 - Germany (273 + Euro)
- 1142 - Denmark/Norway (277 + Euro)
- 1143 - Finland/Sweden (278 + Euro)
- 1144 - Italy (280 + Euro)
- 1145 - Spain/Latin America (284 + Euro)
- 1146 - United Kingdom (285 + Euro)
- 1147 - France (297 + Euro)
- 1148 - International (500 + Euro)
- 1149 - Icelandic (871 + Euro)
- 1250 - Latin 2 Windows
- 1251 - Cyrillic Windows
- 1254 - Turkey Windows
- 1300 - Generic Bar Code/OCR-B
- 1301 - Postal Barcodes *Fg*
- 1302 - Postal Barcodes *Fg*
- 1303 - Postal Barcodes *Fg*
- 2001 - Keyboard 1 - U.S. Standard
- 2002 - Keyboard 2 - U.S. Standard
- 2003 - Keyboard 3 - U.S. Standard
- 2004 - Keyboard 4 - U.S. Standard
- 2005 - Keyboard 5 - U.S. Standard
- 2006 - Keyboard 6 - U.S. Legal
- 2007 - Keyboard 7 - U.S. Legal
- 2008 - Keyboard 8 - U.S. Legal
- 2009 - Keyboard 24 - Latin America
- 2010 - Keyboard 25 - Puerto Rico
- 2011 - Keyboard 26 - Germany
- 2012 - Keyboard 27 - Germany
- 2013 - Keyboard 28 - Germany/Austria
- 2014 - Keyboard 29 - Germany/Austria
- 2015 - Keyboard 31 - France/Belgium
- 2016 - Keyboard 32 - France/Belgium
- 2017 - Keyboard 33 - France/Belgium
- 2018 - Keyboard 37 - Canada (English)
- 2019 - Keyboard 38 - Canada (Bilingual)
- 2020 - Keyboard 39 - Canada (Bilingual)
- 2021 - Keyboard 41 - Italy (Standalone)
- 2022 - Keyboard 42 - Nether./So. Afr.
- 2023 - Keyboard 43 - Netherlands
- 2024 - Keyboard 44 - Spain
- 2025 - Keyboard 45 - Spain
- 2026 - Keyboard 46 - Italy
- 2027 - Keyboard 47 - Italy (Comm'Ns)
- 2028 - Keyboard 48 - Switzerland/France
- 2029 - Keyboard 49 - Switzerland/France
- 2030 - Keyboard 50 - Switzerland/Germany
- 2031 - Keyboard 52 - Sweden/Finland
- 2032 - Keyboard 53 - Sweden/Finland
- 2033 - Keyboard 54 - Norway
- 2034 - Keyboard 55 - Norway
- 2035 - Keyboard 60 - Brazil
- 2036 - Keyboard 61 - Brazil
- 2037 - Keyboard 63 - Portugal
- 2038 - Keyboard 66 - United Kingdom
- 2039 - Keyboard 67 - United Kingdom
- 2040 - Keyboard 68 - Japan
- 2041 - Keyboard 69 - Japan
- 2042 - Keyboard 100: U.S. (EBCDIC)
- 2043 - Keyboard 101: U.S. (EBCDIC)
- 2044 - Keyboard 102: U.S. (ASCII)
- 2045 - Keyboard 103: U.S. (ASCII)
- 2046 - Keyboard 254: U.K. (Special)

- 2047 - Keyboard 265: Germany/Austria
- 2048 - Keyboard 269: France/Belgium
- 2049 - Keyboard 277: Canada (Computer)
- 2050 - Keyboard 281: Norway (Computer)
- 2051 - Keyboard 281: Denmark (Computer)
- 2052 - Keyboard 285: Sweden/Finland
- 2053 - Keyboard 289: France/Belgium
- 2054 - Keyboard 313: United Kingdom
- 2055 - Austria/Germany F.R.- DABASE
- 2056 - Belgium/Swiss/Luxembourg-DBBASE
- 2057 - Denmark/Norway/Iceland - DDBASE
- 2058 - Finland/Sweden - DEBASE
- 2059 - France - DFBASE
- 2060 - Italy - DIBASE
- 2061 - Netherlands/Portugal - DNBASE
- 2062 - Spain - Dsbase
- 2063 - Dcf Rel 2 Compatibility
- 2064 - Dp: Canada (French)
- 2065 - International Set 5
- 2066 - Pi Fonts
- 2067 - Austria, Germany, Switzerland
- 2068 - Belgium
- 2069 - Brazil
- 2070 - Canada (French)
- 2071 - Denmark/Norway
- 2072 - Sweden/Finland
- 2073 - France, Luxembourg, Switzerland
- 2074 - Italy, Switzerland (Italian)
- 2075 - Japan (Latin)
- 2076 - Portugal
- 2077 - Spain/Philippines
- 2078 - U.K., Austral., Ire., H.K., N.Z.
- 2079 - United States, Canada (English)
- 2080 - Math Format
- 2081 - Sonoran Display Fonts
- 2082 - Sonoran Petite Font
- 2083 - Lcs 3800-1 Dump Character Set
- 2084 - Lcs 3800-1 Gothic Folded
- 2085 - Dcf Gp12 Compatibility
- 2086 - Lcs 3800-1 Gothic/OCR-B
- 2087 - Lcs 3800-1 Gothic/OCR-A
- 2088 - Lcs 3800-1 Gothic/OCR-A
- 2089 - Lcs 3800-1 Gothic/OCR-A
- 2090 - Lcs 3800-1 Gothic
- 2091 - 6670 Symbol Set (Os/6)
- 2092 - 6670 Symbol Set (12-Pitch)
- 2093 - 6670 Symbol Set (10-Pitch)
- 2094 - Lcs 3800-1 Format Characters
- 2095 - Lcs 3800-1 Gothic/Katakana
- 2096 - Lcs 3800-1 Gothic
- 2097 - Lcs 3800-1 Gothic
- 2098 - Lcs 3800-1 Gothic
- 2099 - Lcs 3800-1 Text 1 & 2
- 2100 - Lcs 3800-1 Gothic
- 2101 - Lcs 3800-1 Gothic
- 2102 - Lcs 3800-1 Gothic/Katakana
- 2103 - Lcs 3800-1 Gothic/Katakana
- 2104 - Lcs 3800-1 Gothic
- 2105 - Lcs 3800-1 Text 1 & 2
- 2116 - United Kingdom - DUBASE
- 2117 - Keyboard 253: U.K. (Special)

These parameters define the position of the output on the physical page. This is done by moving it in the appropriate direction (X or Y direction).

Tray

Select the paper tray number for which you the Tray Alignment settings shall apply.

Default: tray number 0

Unit

Select the unit for the tray alignment settings.

Offset Parameters are designed to move the output on the page. Positive values move the output away from the origin i.e. left top. Negative values move it closer to the origin. Possible settings are:

- 1/1440 inch
- inch
- cm

Default: 1/1440 inch

Whole Page Offsets

Frontside / Duplex back side

These parameters are moving the page as a whole. For front and back sides (for duplex printing) of a sheet different values can be chosen. X refers to horizontal, Y refers to vertical movements, in reference to page in portrait printing mode.

Default: 0 (all)

Print Direction Offsets

Portrait / Landscape / Reverse Portrait / Reverse Landscape

These parameters are moving output of specific print directions on a page relatively; it is a feature which is used for special paper formats in general. X and Y values are specified for specific print directions.

Example: If you would like to move output for Reverse Landscape only, hold the page in front of you that you are able to read the text. If you want to move the lines down, enter a positive Y value.

Default: 0 (all)

Scaling

Zoom

Changes the size of the IPDS data being imaged on the page. Values greater than 100% enlarge the page, values smaller than 100% reduce the size of the page. This feature is especially useful to make line data printouts fit on a non-edge to edge printer.

Example: set Zoom to 95% to make an A4 edge-to-edge printout fit on a standard PCL5 printer without edge-to-edge capability.

Default value: 100%, meaning no change

Center Zoom

If Zoom is set to a value other than 100%, the reduced or enlarged image can be automatically centered on the paper sheet. With "center zoom" activated, the "whole page offset" values are calculated by the emulation.

Default: disabled

Job separation and finisher commands

Select job separation and finishing commands from the pull down menu.

In IPDS data streams the command 'Alternate Offset Stacker' (AOS) can be used to place printed pages with an offset in the printer's output bin. The 'JOG OUTPUT' command can be inserted to the FORMDEF file on the host system to add the AOS command to IPDS data. This way it is possible to separate different print jobs. Other settings in Job Management as 'Group Boundary' detection can be used, too.

The IPDS to PCL5 emulation supports adding of necessary PCL or PJL commands for specific printer types. In Job separation and finisher commands can be configured which commands should be sent to the printer.

Possible commands are:

- **PCL Job Separation**: results in a PCL command for job separation. The sequence 'ESC&l1T' will be sent to the printer. This is applicable for printers which do not support PJL.
- **PCL Reset**: results in a PCL reset command, i.e. the sequence 'ESC E'. Fonts and macros sent to the PCL printer before will still be available as they are set to permanent after loading to the printer. This is also applicable for printers which do not support PJL.
- **PJL Standard:** will send a sequence of 'PCL Universal Exit Language', 'PJL Job End', 'Enter Language PCL' and 'PCL Reset' to the printer. This is useful for printers which automatically select their emulation between Postscript, PCL and other printer languages. Sending this sequence will assure a proper start of the PCL interpreter of the printer (default).
- **Xerox Nxx Series Finisher**
- **Xerox DP/DT Series Finisher**
- **Xerox DC Series Finisher**
- **DSC Finisher**

Using these options allows control of specific accessories of these printer families. In detail the accessories types are:

- Jog (Shifted output)
- Staple (Stapling)
- Punch (Punching)
- Collate (Collating of print jobs in specified order (see printer's manual))
- Slip Sheets (Inserting divisional sheets)

Some printer models do not support all combinations of these accessories. Also please keep in mind that adjustment of the ID numbers of output bins may be necessary (see IPDS Printer / Output Bin Mapping).

If Xerox DP/DT Series Finisher is selected, a 'Xerox Job Ticket' will be sent to the printer instead of PJL commands.

If DSC Finisher is selected, and if an IPDS FORM name is found, this information can be forwarded to the printer. If set to generate Operator Message, an operator message command is heading to the print job. The job has to be released manually on the printer console so the operator is able to load the printer with the appropriate paper stock.
If set to set Document Media name, an '%%DocumentMedia' command is added at start of the print job requesting a paper of type FORMipdsname from the printer's paper catalog.

Example: If the Host form name is INVOICE, a paper named FORMINVOICE has to be loaded. A 'paper mismatch' will be issued by the printer, if the wrong paper was loaded.

With all configurations the IPDS job name will be sent to the printer using the PJL job command. With Xerox Nxx and DSC finisher 'Full Page' mode will be activated in addition.

- **User Defined:** supports definition of an arbitrary byte sequence. Characters that cannot be entered

using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code. E.g. to enter the ASCII character <ESC>, type '%1b'. The '%' character itself is entered as '%%'. In addition the job name can be added to this sequence by using the place holder '%s'.

Example: To send the PCL 'Universal Exit Language' Sequence '<ESC>%-12345X' the input should be '%1b%%-12345X'.
The previously shown PJL sequence can be extended by additional PJL commands. i.g. '@PJL SET EDGETOEDGE=ON%0D%0A' to turn on 'Full Page' mode as long as they are supported by the printer.

Default: PJL Standard

Media Type
Hole Puncher
Stack Output with offset

These are additional job finishing and processing options. Select as necessary. Depending on the options installed with the printer, some of these features may not be supported by the printer.

Default: Off

Face down printing

Select **Face up** or **Face down** printing.

Default: Face up

Page order

Select **Page 1 - n** to print the job from the first to the last page.
Select **Page n - 1** to print the job from the last to the first page.

Default: Page n - 1

Misc. PCL Features

- **Send IPDS variable spaces as PCL positioning command**

Disable to translate IPDS spaces (EBCDIC $40) with attribute 'variable width' to ASCII spaces ($20) with standard width of the currently selected font. Enable to use PCL cursor positioning.

Disabling this option will result in more performance but less precision with output.

Default: enabled

- **Early AOS Trigger**

Enable to make the IPDS to PCL5 emulation process the AOS command before the beginning of page command.

To perform job separation as special PCL function successfully, the AOS command in IPDS data must be sent by the host system at the right position i.e. between two pages. Some host applications only enable adding the AOS command to the data stream just behind the beginning of a page as the earliest possibility.

Default: enabled

- **Suppress PCL 'Flush all pages' command**

At the beginning or at the end of an IPDS print job a 'Print Buffered Data' command can be sent by the host system. This command results in a PCL 'Flush All Pages' ('ESC &r1F') command. With some PCL printers using this command will lead to significant performance reduction. Using this option allows to turn

off usage of this command.

Default: Off

Page Eject Command

- **Form feed**
- **Duplex page side selection**

Using this parameter you can control which PCL instruction is used by the IPDS to PCL5 emulation to get the printer to eject a page. Since some older printers do not support the instruction Duplex pages side selection, you can use the classical Form feed as an alternative.

Default: Duplex page side selection

Area Fill Method

Select the area fill method from the pull-down menu.

Possible values are:

- Bitmap, no conversion 240->300 dpi
- PCL Pattern, old header type
- PCL Pattern, new header type
- PCL shading and rectangles (Default)
- Bitmap, conversion 240->300 dpi

To fill an area with a gray scale pattern, an IPDS host system sends this pattern to the printer. PCL printers, however, do not support this instruction, which means that it has to be simulated by the emulation.

Bitmap, no conversion 240->300 dpi uses the pattern without change and without scaling from 240 to 300 dpi. This method represents a compromise between speed and accuracy. Moiré effects may occur in the output.

PCL Pattern, old header type and PCL Pattern, new header type are faster since a freely definable PCL character is used to generate the pattern. At the edges, however, overlaps and flaw areas may occur depending on the printer being used.

PCL shading and rectangles uses the PCL command 'Fill Rectangle' to fill the area. This command is only available on fairly recent printers and is the fastest method. When you output a large number of filled areas that are next to each other, however, 'banding' may occur (printing in several stripes) since PCL only supports a maximum of eight gray scales for this command.

Bitmap, conversion 240->300 dpi is similar to the Bitmap, no conversion 240->300 dpi method, but the pattern is scaled to 300 dpi. This method is the slowest but also the most accurate.

Bit Images PCL Compressed

Enable/Disable PCL compression of bit images.

This parameter controls the way in which the IPDS to PCL5 emulation sends PCL matrix graphics to the printer.

If disabled, the emulation process is faster but more data are sent to the printer which might slow down output.

Default: enabled

PCL Color Support

Enable/Disable PCL color support.

If this option is enabled, the IPDS to PCL5 emulation will generate PCL 6 'simple color mode' commands to show colored IPDS text, GOCA bitmap graphics, and GOCA shaded area fills on the printer.

If this option is disabled, non-white text and bitmap colors will be mapped to black and area fills will be accomplished with gray shaded patterns.

Default: enabled

Load IPDS overlay as PCL macro

Enable to load IPDS overlay as PCL macro.

If this option is enabled, IPDS overlays are saved in PCL macros to reduce the transfer of the overlays to every page. This speeds up processing but may cause data loss in printers with not enough memory.

Default: disabled

Use Unit Of Measurement

Enable to use unit of measurement.

With this command you can define whether the conversion of IPDS units into printer units should be completed by the emulation or in the printer. If your printer supports this command, you should activate the parameter.

This will increase the data throughput of the emulation since in this case the coordinates are transformed in the printer and not by the emulation. This saves computer time.

Default: disabled

Force Duplex Printing

Enable to force duplex printing.

This is used to define whether print jobs are printed duplex (on both sides) or not. This assumes that the PCL printer you wish to use is capable of this.

Default: disabled

Copies By Emulation

Enable to generate copies through the emulation.

Some printers do not support the PCL command 'Number Of Copies', or they do not print the right number of copies. If this option is active, the IPDS to PCL5 Emulation will generate copies by sending the job data to the printer several times.

Default: disabled

Bar Code Adjustment

To fine-tune bar code output you may adjust the bars and gaps individually by single pixels. Add or subtract pixels to the single, double, triple and quadruple width elements. Use e.g. -2 to make a gap bar 2 pixels thinner.

Default: all values set to 0

PCL offset registration fix

Some PCL printers are not fully compatible to HP's specification of the 'offset registration' <ESC>&l#U PCL command. This is a workaround for such printers.

Enhanced N-UP via PCL macros

Support for Enhanced N-UP can only be done by packing the page partitions into PCL macros. You might need to upgrade the printer's memory.

Configure paper handling and installed paper sizes of the IPDS to PCL5 Emulation with these parameters. All the values configured here must match with the values configured on the printer.

IPDS Tray

Select the paper input tray of the real printer for the IPDS to PCL5 emulation.

Up to eight trays are supported.

IPDS Tray #0 is the first tray shown. To change settings for other IPDS tray, change this number to select the tray you want.

Accessible

Enable/Disable if tray is accessible.

By activating this parameter, the selected tray is made accessible for the emulation.

Default: disabled

Identification

Enter a character string to identify the tray. This character string may have a maximum length of 10 characters.

Default: MAIN

Paper size ID

Enter paper size ID.

Using this option allows control of sending an ID defined by PCL for paper size in addition to PCL paper tray selection commands (see PCL Output / Input Tray Selection). This allows usage of special paper formats with the printer.

Examples:

These IDs are predefined for all PCL printers, some manufacturers are using other IDs in addition:

1	Executive (7,25 * 10,5 Inch)
2	Letter (8,5 * 11 Inch)
3	Legal (8,5 * 14 Inch)
6	Ledger (11 * 17 Inch)
26	A4 (210 * 297 mm)
27	A3 (297 * 420 mm)
80	Monarch (3,875 * 7,5 Inch)
81	Com-10 (4,125 * 9,5 Inch)
90	DL (110 * 220 mm)
91	C5 (162 * 229 mm)
100	B5 (176 * 250 mm)

Default: 0, no additional ID will be sent.

Tip: With Kentek K40 printers, 'Full Page' mode can be activated using ID 1026 for A4 sized paper.

Std. Input Tray / Duplex Input Tray

Adjust input tray mapping to printer.

The host system that sends IPDS data can request the printer with a 'SIMS' command to select its paper source from various trays. The numbers of the trays are mapped to the corresponding trays of the PCL printer. Since, however, there are various designs of PCL printers, this gives you an opportunity to tailor this image to your specific printer.

There are two trays you can have the paper pulled from. "Standard input tray" selects the paper tray for simplex jobs and simplex pages in mixed plex jobs. "Duplex input tray" selects the tray for duplex pages. This is useful if your printer pulls in paper in different positions for simplex and duplex (e.g. simplex has to be face-down and duplex face-up).

The "Automatic (ID 0)" tray selection discards the tray number information from the output and lets the printer choose the paper tray depending solely on the "paper size" information.

Default: IPDS tray #0 maps to printer tray #1, IPDS tray #1 maps to printer tray #2 and so on.

Rotate

Define the rotation of all pages sent to the selected paper tray.

This might be useful if the printer allows feeding of large paper formats in one orientation only. Possible settings are:

- 90°
- 180°
- 270°

Default: 0° (no rotation)

Paper Size

Select the installed paper size for the selected tray.

The pre-defined paper sizes A4, Letter, Legal and user-defined values are supported.

Unit

Select the unit for the values in Width and Height for user defined paper sizes. Possible settings are:

- 1/1440 inch
- inch
- cm

Width

Define the width of the user defined paper size. Enter the value for the width in the unit set in Unit.

This option is only accessible if paper size is set to 'User defined'.

Height

Define the height of the user defined paper size. Enter the value for the height in the unit set in Unit.

This option is only accessible if paper size is set to 'User defined'.

Wide carriage/LEF

Default: disabled

Ignore Page Offset

Enable to ignore page offset.

When printing formatted lists ('Fixed Size Records' or 'AFP Line Printer' streams) that are not reformatted using PSF on host side, it might be necessary to print to the largest possible area on the paper. With this option a 'Page Offset' command sent by the IPDS host system can be disabled.

Default: disabled

Media attributes

Depending on the printer type, there can be an additional seletion of 'Media Attributes' like 'Paper Type' and 'Media Weight' which can be assigned to the selected IPDS Tray number.

If you additionally set the 'Std./Duplex input tray' parameters to 'Automatic (ID 0)' for all activated 'IPDS Trays', you can make the printer choose the print medium automatically, based on the media type.

Fonts

- **Algorithm**

Select the font algorithm.

On printers with recent font headers, which support a resolution of 600 dpi for download fonts, instead of a conversion of the 240 dpi host fonts into a 300 dpi resolution, it is also possible to select a conversion to 600 dpi. This improves the quality of the output, but adversely affects speed as a result of the considerably greater volume of data.

The PCL5 Technical Reference Manual recommends the use of the recent font header. On printers that only support the older font headers, the format of the header can be set using this parameter. The possible settings are:

- 300 dpi Old font header 240->300 scaling alg 1
- 300 dpi New font header 240->300 scaling alg 1
- 600 dpi New font header 240->600 scaling alg 2 (Default)
- 300 dpi New font header 240->300 scaling alg 3
- 300 dpi New font header 240->300 scaling alg 4
- 600 dpi New font header 240->600 scaling alg 5

- **Outline Font DPI**

IPDS outline (vector) fonts are rendered into bitmap fonts by the emulation. This value specifies the resolution for that bitmap font. Remember: The higher the resolution, the better the print quality and the larger the amount of data generated.

Off means, the Outline fonts are replaced by a Times Roman font of similar size.

- **Use mass storage for download fonts**

For debugging purposes only. Writes a copy of the incoming fonts into the resource folder.

Default: disabled

Max. output image dpi

Limits the PCL image resolution for printers that cannot handle resolutions higher than the selected value. The default value 'off' means no limitation is active.

Default: off

Settings

- **Inword Position Adjustment**

Enter inword position adjustment.

Conversion errors in the units used may result in positioning errors. Using this option it is possible to force compensation, even inside a word. The value defines how great the offset in 300 dpi may become before a repositioning process takes place. The parameter directly influences the output size.

The possible values are 0 to 25, with values up to approx. 10 being sensible.

Default: 0 (disabled)

- **SVI Threshold**

Enter SVI threshold.

Controls the variable space character increment. Since the result will be useless if in the data stream a value of several inches is defined for this value, it is possible to use this parameter to define an upper limit, up to which the values in the data stream may be used.

Default: 0 (disabled)

- **Debug Level**

Set the debug level.

Controls how many additional messages the IPDS to PCL5 emulation writes to the Dispatcher log file, when 'Debug' message Level is enabled.

Possible values are 0 to 3.

Use only while doing traces. Contact support service to learn when to set this parameter. This parameter afflicts performance.

Default: 0 (disabled)

- **PCL Full Page**

The IPDS to PCL5 emulation assumes that the attached PCL printer is able to print to the whole sheet i.e. a so called 'Full Page' mode or 'edge to edge' printing is enabled. Some printers do not support this mode. In this case the unprintable area can be reached using special methods only.

If PCL Full Page set to off, the IPDS to PCL5 emulation will try to reach unprintable area using other positioning methods.

Default: enabled

- **Restricted HP-GL Output**

Enable to avoid HP-GL 'Rotate' and PCL 'picture frame' commands.

With this option set, the IPDS to PCL5 emulation will not generate HP-GL 'Rotate' and PCL 'picture frame' commands. Use this switch, when IPDS output is passed to an PCL to Metacode emulation.

Default: disabled

- **Duplex To Simplex**

This parameter should be used when four conditions meet:

1. The printer connected to the $ProductName$ system is not capable of 'Duplex' printing
2. The 'Input Paper Size' is set with 'No edge to edge'
3. The print job is 'duplex'
4. The printer does not handle the PCL 'Page offset registration' command correctly when printing a page flagged as 'Duplex backside'

In short, this is a workaround for a bug in some printers' PCL interpreters. Use only when horizontal positioning is scrambled on every second page of the print job. It usually is a better idea to generate the print job on the host system as 'simplex' if the attached printer is capable of printing 'simplex' only.

Default: disabled

Resource Path

See section IPDS Overlay Supplement.

Host Communication

This setting changes the way the IPDS to PCL5 emulation reports initial status (first IPDS ACK-Reply) to the host when the emulation process is started. Keep in mind that the 'Loading' parameter controls how often the IPDS emulation gets loaded per Logical Printer. If it is set to Static Mode the first IPDS ACK will be returned to the host only once at the beginning of the very first print job.
When the host system receives such a 'Normal Printer Restart (NPR)'-ACK-Reply it considers the printer to be in a state directly after power up, i.e. it has no fonts and resources loaded and the host will re-send all necessary resources to the emulated IPDS printer. This enlarges the print job, but can be necessary under certain system environments. Possible settings are:

- **Standard:** no additional ACK is generated, i.e. the 'Normal Printer Restart'-ACK-Reply is generated by the channel device driver, if applicable (default).
- **Normal Printer Restart before job:** the IPDS to PCL5 Emulation will generate one ACK-Reply of this kind at the beginning of the print job.
- **Normal Printer Restart after job:** the IPDS to PCL5 Emulation will generate one ACK-Reply of this kind after the print job, generating no duplicate NPR-ACKs when the transport protocol driver (e.g. channel card) also generates an NPR-ACK.
- **Simulate printer offline:** the first ACK-reply sent to the host says that the simulated printer is offline. This is made so that a host operator can start spooling print jobs into a host printer queue without these jobs being printed immediately. Some hosts require the printer to be present but 'offline' to enable spooled print jobs. To print the jobs later on, you have to set the 'Host Communication'-Parameter back to its previous value.

Default: Standard

Do not use this option with a File Input Port.

Emulation Loading

Set for which job the emulation shall send resources to the printer. Possible settings are:

- **Channel mode (static):** The IPDS to PCL5 emulation sends resources to the printer for the first job only.
- **Standard mode:** The IPDS to PCL5 emulation sends resources to the printer for every job that is received.

Default: Standard mode

Out of paper host message

- **Generate NACK**
- **Generate SENSE**

Depending on the Host system OS, communicating the 'out of paper' printer status needs a 'SENSE' or 'NACK' type packet to be sent back to the host. Original IBM systems require both, some compatible systems need a 'SENSE' only. If you switch off both message types, no 'out of paper' printer status will be sent.

Use Committed page counter

This switch affects the page counters which are reported back to the host system in an ACK/NACK reply. It only applies if 'page confirmation' is enabled in the output port's 'Job Monitoring' tab.

If set, the 'committed' page counter will be incemented in sync with 'received' page counter. If not, the 'committed' counter will be incremented after the page has been confirmed as 'printed' by the printer, which is required by some non-IBM Host OSes.

Job Name

An IPDS Host is able to send a job name or job identification within the print job data. If such an information is present, FORMS4WORK can extract that information and pass it on to its own spooling system.

- **Extract job name from Group Boundary command**

Enable/Disable extracting job name from Group Boundary command.

Usually, the job name gets sent with the 'Group Boundary' IPDS command. If this parameter is enabled, the IPDS interpreter will use that information.

Default: enabled

- **Add form name to job name**

Enable to add form name to job name. Extract job name from Group Boundary command must be enabled.

If the job name is extracted from a 'Group Boundary' IPDS command, it is built using job name, job number and user name as given by the host system. This option will also add the form name given by the host system to this job name.

Default: disabled

- **Add MVS job class / OS400 spool file name**

If connected to an MVS type host, IPDS is able to extract the job class ID out of the IPDS 'Group Boundary' command. When this option is enabled, the job class ID is added to the job's name.

Default: disabled

- **Extract job name from data stream**

Enable to extract job name from data stream.

If the host does not send the 'Group Boundary' IPDS command, the job name might be extracted out of

the banner or job separator pages.

Default: disabled

- **Use default job name (IPDS_JOB_#)**

If this option is enabled and no other job name is found (from "group boundary or page data), the IPDS emulation will generate a short job name consisting of "IPDS_JOB_" plus the FORMS4WORK job number. This short name fits into printers' LC-Displays.

If this option is disabled and no other job name is found, the standard long FORMS4WORK internal job name consisting e.g. of the sender's IP address is used.

Default: disabled

- **Trigger**

Define the trigger for the 'extract job name from data stream' parameter.

The trigger is a constant character sequence which precedes the variable job name in the banner page. You would describe this e.g. as a field descriptor. The trigger string has to be on the same line as the job name and before the job name.

- **Cut Offset**

Set the number of character positions (columns) between the last character of the trigger string and the first character of the job name.

Possible values: 0 to 255.

Default: 7

- **Cut Length**

Set the length of the job name.

It describes how many characters starting from the cut offset after the trigger string should be used for the job name.

Possible values: 1 to 30.

Default: 8

Example: The banner page looks like this:

```
*****START*****START*****START*****
*
* JOBID.......:  JOB08207
* JOB NAME....:  MYJOBNAME
* USERID......:  THEUSER
* SYSOUT CLASS:  M
*
*****START*****START*****START*****
```

To extract the job name, the trigger would be set to 'JOBID'. Since the Job name here e.g. JOB08207 is eight characters long and starts ten characters after 'JOBID', the cut offset would be set to 10 and the cut length to 8.

A trigger 'JOBID.......:' (with colon) and a cut offset of 9 would also work.

Job Separation

- **Split on command**

"Split on Command" enables job splits on a specific IPDS command contained within the print job. For the XOH and XOA commands, the subcommand order may be entered as a 4-digit hexadecimal value. This is especially useful if the IPDS sender inserts non-standard commands into the data stream, e.g. to drive finisher equipment. For further reference, please use IBM document S544-3417 'IPDS Reference Manual'.

- **Job Split on Trigger**

Define the trigger on which the job shall be split.

Sometimes it is desirable to split a large print job into several smaller ones, e.g. to start printing sooner when the jobs are very large or to trigger an offset stacker at the printer's finisher.

Job split on trigger means that the job will be split after the defined string has been found on the page.

- **Split Job after x pages:** enter the number of page breaks after which the incoming print job is to be split into smaller parts. For example, a print job with 5000 pages can be split into 50 smaller print jobs, each consisting of 100 pages. Also if no specific criterion exists for the end of a print job, and therefore all print jobs from the host system are processed in the FORMS4WORK system as a single job, a forced split can be achieved using this parameter. This option is helpful if the printer is collecting print jobs completely before starting printing. If the job is split into smaller pieces, the time until the first page gets printed is reduced. But it must be sure that some queue optimization of the printer is disabled, if the partially printed job pieces have to be in the right order. Maximum number of pages is 9999.

Default: 0 pages

- **Split job on AOS:** Enable to split the job when an IPDS 'Alternate Offset Stacker (AOS)' command has been encountered in the data stream. If Printer Control/Misc./Early AOS trigger is set, the job will be split before the current page, or after if not set. The position of the AOS command within the data stream can usually be controlled via the 'JOG OUTPUT' command in the FORMDEF on the host system.

Default: disabled

- **Split Job at group boundary:** Enable to split the job when an IPDS 'XOH Group Boundary Terminate' command has been encountered in the data stream.

Default: disabled

- **Split at output bin change:** If enabled, IPDS will split the job whenever the host system changes the 'IPDS media destination ID'.

Default: disabled

- **Split at intput tray change**

If enabled, a new print job is generated whenever the IPDS input media source changes, either after a SIMS command or upon an LCC order. Use this feature, if you have a PCL printer that cannot switch input paper trays within a single print job.

Default: disabled

240 dpi IM1 Images

Certain raster graphics as defined in the IPDS IM tower are sent by the host system without information about the required printing resolution (dpi). To print these graphics correctly, IPDS to PCL5 emulation assumes 240 or 300 dpi, depending on the configured printer model.

Some host systems are sending IM graphics instead of IOCA graphics which do not include information about resolution. These IM graphics do ignore the printers resolution i.e. an AFP resource has been attached 'inline' to print job data. Such graphics and if necessary their positioning can be corrected using the options Enlarge Image and Stretch Position.

Raster graphics as defined in the IOCA tower will always contain information about their resolution. The IPDS to PCL5 emulation is scaling these graphics so that the problem described above will not occur.

- **Enlarge Image**

Enable to enlarge image.

Default: disabled

- **Stretch position**

Enable to stretch position.

Default: disabled

Transparent Data Only

Select an entry from the pull-down menu.

This option will extract text data from the IPDS 'Write Text / Transparent Data' command using different methods. IPDS data is used here as an encapsulation for other type of data which will be processed by an other emulation behind IPDS to PCL5 if necessary.

- **off (default)**

Select to not affect the IPDS to PCL5 emulation.

- **data only**

Select to let the IPDS to PCL5 emulation not generate printer commands, but print text data extracted from IPDS 'Write Text / Transparent Data' command without any conversation instead.

- **data + LF**

Like data only, but each block of data will have a line feed (Hex 0x0A) attached.

- **valid channel order, data, LF**

Like data + LF, but data blocks will get printed only if the first byte is a valid ANSI channel command:

0x40: Space 1 line before printing
0xF0: Space 2 lines before printing
0x60: Space 3 lines before printing
0x4E: Suppress Space before printing
0xF1: Skip to channel 1 and print
0xF2: Skip to channel 2 and print
0xF3: Skip to channel 3 and print
0xF4: Skip to channel 4 and print
0xF5: Skip to channel 5 and print
0xF6: Skip to channel 6 and print
0xF7: Skip to channel 7 and print
0xF8: Skip to channel 8 and print
0xF9: Skip to channel 9 and print
0xC1: Skip to channel 10 and print
0xC2: Skip to channel 11 and print
0xC3: Skip to channel 12 and print

Default: off

Enlarge GOCA raster images

Enable to enlarge GOCA raster images.

Sometimes, the host system generates raster graphics of the GOCA type with the wrong dpi resolution value. Enable this option if these images are printed too small.

Default: disabled

Send form and job name via PJL

Enable to send form and job name via PJL

If a valid names for job, user or form have been recognized in a IPDS 'Group Boundary' command, they will be send to the printer in special PJL command at the beginning of the job. These commands can be used as a trigger for selecting the configuration in an Overlay Manager attached to the IPDS emulation.

Example:

A host system is sending job 'MYJOB123' produced by user 'USER001' with form name '*STD'. This will result in a PJL sequence which will be as:

```
@PJL SET CSP_HOSTJOBNAME=MYJOB123
@PJL SET CSP_HOSTFORMNAME=*STD
@PJL SET CSP_HOSTUSERNAME=USER001
```

In an Overlay Manager attached to the emulation, a configuration trigger like 'CSP_HOSTFORMNAME=*STD' could be defined.

Default: disabled

Substitute incomplete download fonts

Enable to substitute incomplete download fonts.

If this feature is checked, the IPDS emulation will substitute incomplete (broken) download fonts with a courier font.
Use only if necessary since this switch might affect logos/images downloaded as a font.

Default: disabled

Check VPA

IPDS can generate 'Position Check NACK' messages, if the cursor or an imaging area is out of the 'Valid Printable Area' (VPA) bounds. There are options for

Never	no VPA boundaries are checked. This is the default setting.
Auto	the VPA boundaries are checked if the host system has sent an 'Exception handling control' (EHC) command with the 'Report Position' flag set.
Always	the VPA is checked and the EHC flag is ignored.

The Check VPA feature does not apply to secure overlays.

IPDS input tracing

For debugging purposes only. If enabled, an IPDS input trace taken directly at the emulation's entry point is written into the emulation's resource folder. Useful, if IPDS is a secondary emulation, e.g. if it is coupled with the "Comparex Line Mode" emulation.

Default: Input trace off

IPDS Overlay Supplement

This chapter describes the Overlay Supplement options of the IPDS to PCL5 emulation. With the Overlay Supplement the user will be able to add user defined page elements.

The Overlay Supplement is available in IPDS emulation, version 2.00.114 and higher. The Overlay Supplement enables the user to add recurring supplements such as standard texts, images or forms to an existing print job. These supplements will be furthermore referred to as Overlay Resources or Overlays, respectively. Overlay Resources can be created by any Windows application using the Resources Printer Driver.

Definitions

Be careful not to confuse those overlays with the overlays that are generated on the host:

IPDS Page Segment

An overlay generated on the host that is added by the IPDS interpreter to the printout on a fix and defined position.

IPDS Overlay

An overlay generated on the host that is added by the IPDS interpreter with a variable or a fix offset to the printout. These overlays can be requested from the host using on the IPDS commands 'Include Overlay' or 'Load Copy Control'. The latter is often referred to as LCC or 'Copy-Group' overlays, respectively.

Overlay Resource

Overlays that are added to the print data stream not directly controlled by the host, but dependent on the rules defined in the file IPDSOVER.INI. These overlays emerge from the output files of the Resources Printer Driver.

Overlay Resources are files - mostly with the extension *.CSP -, that are generated by the Resources Printer Driver when printing a Windows document. The Resources Printer Driver behaves similarly to a standard Windows printer driver in the 'Print to file' mode.

The files generated by the driver contain a copy of the printed page as a PCL bitmap image with a resolution of 300 dpi and a file header, that includes additional information on the resource name and its position and orientation on the printed page.

The file IPDSOVER.INI contains the commands and definitions for the sequential control of the IPDS Overlay Supplements. This is an ASCII text file and can be edited using any Windows text editor such as NOTEPAD.EXE.

On the FORMS4WORK system any IPDS to PCL5 emulation in a print process can use its own IPDSOVER.INI file. Default directory of the file IPDSOVER.INI is the resources directory of the referring FORMS4WORK Server's emulation.

You can edit this file after clicking the Button Edit by the resource path entry 'Emulation / Configure / Resources'. It is also possible to use a shared file IPDSOVER.INI for several IPDS emulations, thus enabling an easier system maintenance. The resources path of the emulations concerned has to be changed to a shared directory.

Any file name of an overlay resource mentioned in the file IPDSOVER.INI is composed relatively to the IPDSOVER.INI file's path name in the file IPDSOVER.INI by using the command DEFINE FILENAME.

If the overlay resource resides in the same directory as the file IPDSOVER.INI, no path must be added to the file name.

Example:

In a FORMS4WORK system there shall be two IPDS emulations in one print process. Both emulations shall share the overlay resource KOPF1.CSP.

It is suggested to save this resource to

<Installation Path>\Res\DSPPATH1\KOPF1.CSP.

An overlay resource FORM1.CSP for just the first emulation should be saved to

<Installation Path>\Res\DSPPATH1\1\FORM1.CSP.

The file IPDSOVER.INI in the directory

<Installation Path>\FORMS4WORK\Res\DSPPATH1\1\

contains:

```
DEFINE ID 1 FILENAME ..\KOPF1.CSP
DEFINE ID 2 FILENAME FORM1.CSP
```

where <Installation Path> is the installation path of FORMS4WORK

The file IPDSOVER.INI is a line oriented plain text file in ASCII format. Any line is finished with a CR/LF (Carriage Return/Line Feed). Any line is a blank line, a comment line or a command line, respectively. The file IPDSOVER.INI is opened and evaluated by the IPDS interpreter at the beginning of a print job.
If there are no current IPDS print jobs to be processed by the FORMS4WORK system, the IPDSOVER.INI can be edited even when the system is running.

The changes, however, do not occur before the next print job is started. Is the interpreter in 'Static Mode', it is recommended to restart the referring dispatcher.

If there is no IPDSOVER.INI available for the referring interpreter, the IPDS Overlay Supplement for this IPDS interpreter will be disabled. If an Overlay Resource file mentioned in the file IPDSOVER.INI can not be found, the referring rule will be skipped without displaying an error message. This does not affect the other resources in the same IPDSOVER.INI.

For a better overview and documentation of the definitions and rules in this file we suggest that you add comment lines to every definition or rule. Comment lines start with a semicolon (ASCII 59) and should not be longer than 255 characters.

```
; IPDSOVER.INI date ... for application "Example"
; last modified ... : ...
```

In a command line, any keyword and argument is separated by one or several blanks. Arguments may not contain blanks! Keywords are not case sensitive, but arguments are. They should not contain German Umlauts (ä, ü, ö), German ß or accent characters (´). Punctuation marks and numbers are allowed.

Any command line starts with the keyword DEFINE for a definition or RULE for a rule. Any $OEMName$ Overlay Resources file is assigned via definition to an ID number. If you want to use the same resources file at different coordinates on the page (using the keyword OFFSET), you have to assign several ID numbers.

Compliant with the rules, pasting the overlay resource with the ID number is assigned to certain events. Several triggers that were defined over different keywords can be combined as a logical 'AND' operation in one RULE. If the conditions should be combined as a logical 'OR' operation, you have to use more than one RULE entries.

The maximum number of definitions and rules in one IPDSOVER.INI is 40 each.

The IPDS Overlay Supplement uses its own sheet counter in the IPDS interpreter during procession of a print job. At the beginning of a print job or using a RULE with the keyword RESETCOUNTER the sheet counter is reset to 1.

Difference between sheet and page

To simplify arranging the overlays the IPDS Overlay Supplement counts sheets as they are printed and not the IPDS print pages shown on the host. The IPDS counter on the host counts logical pages. A page can contain up to eight logical pages. When printing simplex (one-sided, single-edge) without combination output tray (N-UP) a logical page corresponds to a sheet.
The sheet counter makes it easier to find the correct place for an overlay in mixed print jobs. This is done by counting the printed sheets after a test print.

Counting and duplex printing

When printing duplex (double-sided) a sheet contains 2*N logical pages, with N being the number of combined pages on one sheet (normally 1).
The IPDS Overlay Supplement can distinguish between front and back pages.
'Tumble' and 'Calendar' duplex or 'long edge' and 'short-edge binding', respectively, will be treated equally.

Counting and N-UP printing

In the N-UP printer mode of the IPDS ('combination output tray') the host prints several pages on one sheet; i.e. when doing 3-UP printing 3 logical pages per front and back page. Empty parts of pages are also counted. The Overlay Supplement only counts the actually printed sheets, not the IPDS pages.

Resetting the sheet counter

The internal sheet counter starts with 1 and will be reset at the beginning of a new print job or with a RULE and RESETCOUNTER.

Definitions assign an ID number to a resource. In most cases the resource can be used under this ID number. For a better overview it is suggested to put the definitions at the top of the IPDSOVER.INI. Definitions must start with the keyword DEFINE and may contain two or more combinations of keywords and arguments. The keyword's ID and FILENAME must be contained in a definition, too.

ID

ID requires a numeric argument between 1 and 65535. The ID number can be chosen anywhere in this range. It may only be defined once per IPDSOVER.INI.

Example: `ID 10`

FILENAME

FILENAME requires a alphanumeric argument for the file name of the resources file with file name extension and a relative path to the IPDSOVER.INI if necessary.

Example: `FILENAME ..\kopf1.csp` chooses the file KOPF1.CSP from the parent directory.

OFFSET

OFFSET requires two numeric arguments X and Y for positioning the overlay relatively to the origin defined in the overlay file. The unit is 1 PCL dot (a 300^{tel} of an inch). This makes an exact positioning of the

overlay possible without having to generate a new resource via the printer driver. The point of origin is in the upper left corner of the page at the beginning of the 'PCL Printable Area' (dependent on the printer model). Positive coordinates point to the right hand side or the bottom of the page, respectively.

Example: `OFFSET -50 -100` shifts the overlay 50/300 inches to the left and 100/300 inches to the top (that equals 4.2 millimeters to the left and 8.5 millimeters to the top).

MACRO

MACRO does not require any argument. If MACRO is specified, the resource will be stored in the printers as a (permanent) PCL macro. That way it is possible to reduce the size of the data stream sent to the printer, when the overlay in a print job is used repeatedly. Premise is a corresponding memory expansion of the printer.

Example: `MACRO`

ADDBACKSIDE

ADDBACKSIDE does not require any arguments. ADDBACKSIDE will generate from a simplex printed page a duplex page with an overlay as backside. ADDBACKSIDE must be used together with SIDE SIMPLEXBACK in the referring RULE. When the backside is pasted, other control commands for a form feed will be used.

Example: `ADDBACKSIDE`

RGBCOLOR

RGBCOLOR requires three numeric arguments ranging from 0 to 255 for the red, green and blue values. 0 0 0 is black, 255 255 255 is white. The colors will be mixed according to the rules for PCL5c color laser printers. The RGBCOLOR command enables the user to color a black-and-white bitmap of the Resource Overlays.

This works only with PCL5c color laser printers and not with ink jet or other color printers.

Example: `RGBCOLOR 127 0 127` tinges the overlay in a violet color.

Rules set the conditions for an overlay resource to be added to the data stream. A rule is composed of at least the keyword RULE plus the keyword ID with argument. Such a rule will be valid for every page of the print job.

To specify the scope of application, rule keywords can be combined. Any keyword may be used only once per rule. It is possible to create more than one rule for one and the same overlay resource. Keywords in one rule are associated logically with 'AND'. If more than one rule are processed, the keywords are associated logically with 'OR'.

ID

ID requires a numeric argument between 1 and 65535. The ID number can be chosen from this range and must correspond to an ID number in the definition part.

Example: `ID 10`

FROM

FROM requires a numeric argument between 1 and 65535. The FROM parameter specifies the sheet counter reading from which one on the overlay resource will be pasted.

For duplex and N-Up print jobs that rule is valid for the whole sheet, i.e. the overlay will be pasted to the front and to the back of a sheet. If this should not be done, the rule must be complemented with the SIDE

keyword, e.g. SIDE FRONT (see below).

Note for programmers: The keywords FROM, TO and STEP do function similarly to the FOR statement in higher level programming languages.

Example: `FROM 2` pastes the overlay from sheet 2 on to every coming sheet of the print job.

TO

TO requires a numeric argument between 1 and 65535. The TO parameter specifies the sheet counter reading up to which one the overlay resource will be pasted.

For duplex and N-Up print jobs that rule is valid for the whole sheet, i.e. the overlay will be pasted to the front and to the back of a sheet. If this should not be done, the rule must be complemented with the SIDE keyword, e.g. SIDE FRONT (see below).

Example: `TO 2` pastes the overlay up to sheet 2 to every sheet of the print job (sheets 1 and 2).
FROM 1 TO 1 pastes the overlay only to the first sheet.

STEP

STEP requires a numeric argument between 1 and 65535. The STEP parameter together with the FROM keyword specifies the increment with which the reference value should be counted from the start counter on. If the reference value equals the sheet counter, the condition is fulfilled, i.e. if the overlay resource shall be pasted on every second sheet, you have to put in STEP 2.

For duplex and N-Up print jobs that rule is valid for the whole sheet, i.e. the overlay will be pasted to the front and to the back of a sheet. If this should not be done, the rule must be complemented with the SIDE keyword, e.g. SIDE FRONT (see below).

Example: `FROM 2 STEP 2` pastes the overlay on every second sheet, starting with sheet 2.

SIDE

SIDE requires a keyword as a further argument: FRONT, BACK or SIMPLEXBACK. SIDE specifies, if an overlay resource should be pasted to the front and to the back of a sheet.

In duplex jobs the overlay will be pasted to both front and back if SIDE is not chosen. In simplex jobs you can use SIDE SIMPLEXBACK to paste an overlay to the backside of the sheet. To achieve that, an additional page will be added to the data stream.

In print jobs with both simplex and duplex pages there may be two rules required: one with the keyword SIDE BACK and one with SIDE SIMPLEXBACK.

FRONT

Pastes the overlay resource when either the front of a duplex sheet is reached or a simplex page. When printing simplex, SIDE FRONT is redundant.

Example: `SIDE FRONT`

BACK

Pastes the overlay resource when the backside of a duplex sheet is reached. SIDE BACK checks for a logical condition: The sheet was marked from the host as 'duplex' and the back of the sheet will be edited.

If the host marks the page as 'simplex', the condition cannot become true, because there is no back of the sheet in the print job. In this case use SIDE SIMPLEXBACK.

Example: `SIDE BACK`

SIMPLEXBACK

Pastes an additional printed page that contains the chosen overlay resource to the output data stream after a simplex printed page on the same sheet. The corresponding ID number must be marked in the definition as ADDBACKSIDE.

If there is more than one overlay to be included on one page, the RULE with SIMPLEXBACK has to be the last one in the sequence of rules because SIMPLEXBACK will cause a form feed in the print data stream output.

Example: `SIDE SIMPLEXBACK`

FORMNAME

Requires an alphanumeric argument. If the host sends an IPDS 'Group Boundary' command in the data stream that contains a FORMS parameter, this keyword can be used to check for the forms name sent with FORMS. FORMNAME requires a PSF on the host that supports 'Group Boundary'. FORMNAME is case sensitive.

FORMNAME, CSPSTRING and FINDSTRING may not used together in one and the same rule.

Example: `FORMNAME *STD` pastes the overlay, if the form name is set to default in the (AS/400-) print job properties. The default form name on the host can be linked to the login profile, thus enabling the system operator to associate certain user groups to their own overlay, e.g. its own letterhead for the marketing dept, its own logo for the R & D. If the user does not want to use that form he or she can simply use another form name when printing. We recommend to setup a default reply to the operator message prompting to use another form.

CSPSTRING

Requires an alphanumeric argument. CSPSTRING is case sensitive. CSPSTRING searches the print data stream for the sequence 'CSPOVERLAY!'. As argument from the data stream it uses the string, that stands between the first and another exclamation mark. The whole initial string is in the printout replaced with blanks. It is recommended to put this command at the beginning or the end of the page.

Example: `CSPSTRING Letterhead1` pastes the overlay if the print data stream contains the identification 'CSPOVERLAY!Letterhead1!'. The text 'CSPOVERLAY!Letterhead1!' will be replaced in the printout with blanks.

FINDSTRING

Requires an alphanumeric argument. FINDSTRING is case sensitive. FINDSTRING searches the print data stream for the sequence mentioned in the argument without affecting the print data stream. The search sequence may not contain any blanks.

Example: `FINDSTRING assessment` pastes the overlay, if the data stream contains the word assessment. The word assessment will not be replaced by blanks in the printout.

FINDSTRING2

Requires an alphanumeric argument. FINDSTRING2 is case sensitive. FINDSTRING2 searches the print data stream for the sequence mentioned in the argument without affecting the print data stream.

The search sequence may not contain any blanks. FINDSTRING2 is to be used in conjunction with FINDSTRING in order to achieve an 'AND' condition when searching for two words on the same page.

Example: `FINDSTRING John FINDSTRING2 Doe` pastes the overlay, if the data stream contains the words John and Doe. These two words will not be replaced by blanks in the printout.

JOG

Does not have any arguments. The condition JOG is true if the print data stream contains the command 'Alternate Offset Stacker / AOS'. JOG can also be used to separate print jobs. The operator may create it by using the FORMDEF command 'JOG OUTPUT'.

Example: `JOG` pastes an overlay on the first sheet of a new print job.
If one of the rules contains conditions that scan the sheet counter (FROM, TO or STEP), it is recommended to combine JOG with RESETCOUNTER.

RESETCOUNTER

Does not have any arguments. If a rule uses RESETCOUNTER, the sheet counter will be reset to 1, when the other conditions in this rule become true.
In print jobs with a fix number of pages we recommend to combine RESETCOUNTER with FROM and TO.

In print jobs with a variable number of pages we recommend to combine RESETCOUNTER with JOG, FINDSTRING or CSPSTRING.

Example: `RESETCOUNTER`

MEDIASOURCE

MEDIASOURCE requires a numeric argument between 0 and 255. The condition MEDIASOURCE will become true, if the host sends for the corresponding sheet a control command for the paper feed with the corresponding number.

Dependent on the host the default tray is in most cases either tray one or tray two. According to the printer model set in the IPDS emulation, only a limited number of paper feed trays can be used. By defining the assignment, the IPDS interpreter enables the use of several logical paper feed trays that chose the same 'real' paper feed tray. In combination with MEDIASOURCE it is possible to create 'virtual form paper feed'.

Example: `MEDIASOURCE 2` pastes the overlay, when paper from slot 2 shall be used.

MEDIADESTINATION

MEDIADESTINATION requires a numeric argument between 0 and 255. The condition MEDIADESTINATION will become true, if the host sends for the corresponding sheet a control command for the paper output tray with the corresponding number.

Dependent on the host the default tray is in most cases either tray one or tray two. According to the printer model set in the IPDS emulation, only a limited number of paper output trays can be used. By defining the assignment, the IPDS interpreter enables the use of several logical paper output trays that chose the same 'real' paper output tray. In combination with MEDIASOURCE it is possible to create 'virtual form output trays'.

Example: `MEDIADESTINATION 2` pastes the overlay, when paper shall be put out to tray 2.

Overlay only on the first sheet

```
DEFINE ID 1 FILENAME ov1.csp
RULE FROM 1 TO 1 ID 1
```

Overlay on all pages from page 2 on

```
DEFINE ID 2 FILENAME ov2.csp
RULE FROM 2 ID 2
```

Overlay on all backsides (duplex printing)

```
DEFINE ID 3 FILENAME ov3.csp
RULE SIDE BACK ID 3
```

Overlay on all backsides (simplex printing)

```
DEFINE ID 4 FILENAME ov4.csp ADDBACKSIDE
RULE SIDE SIMPLEXBACK ID 1
```

Overlay only on backsides, from sheet 2 on (simplex and duplex printing)

```
DEFINE ID 5 FILENAME ov5.csp
DEFINE ID 6 FILENAME ov5.csp ADDBACKSIDE
RULE FROM 2 SIDE BACK ID 5
RULE FROM 2 SIDE SIMPLEXBACK ID 6
```

Overlay on any third front

```
DEFINE ID 7 FILENAME ov7.csp
RULE STEP 3 SIDE FRONT ID 7
```

Chose overlay by form name on the host / IPDS 'Group Boundary' command

```
; FORMS name on the host is LETTER
DEFINE ID 8 FILENAME ov8.csp
RULE FORMNAME LETTER ID 8
```

Chose overlay by CSPOVERLAY!...! command in the print data stream

```
; document must contain CSPOVERLAY!form9!
DEFINE ID 9 FILENAME ov9.csp
RULE CSPSTRING form9 ID 9
```

Chose overlay by text querytext in the print data stream

```
DEFINE ID 10 FILENAME ov10.csp
RULE FINDSTRING querytext ID 10
```

Reset sheet counter after a certain number of sheets

```
; Reset sheet counter after every 500th sheet
RULE FROM 500 TO 500 RESETCOUNTER
```

Reset sheet counter by AOS / JOG output

```
RULE JOG RESETCOUNTER
```

Overlay dependent on 'Input Media Source' / Paper feed

```
DEFINE ID 11 FILENAME ov11.csp
RULE MEDIASOURCE 1 ID 11
```

Overlay dependent on 'Destination Bin' / Output tray

```
DEFINE ID 12 FILENAME ov12.csp
RULE MEDIADESTINATION 2 ID 12
```

Invoice with several pages

The task is to print invoices that consist of a letter with letterhead on the front of sheet 1 and the detailed invoice from sheet 2 on. The print job is simplex. The company's general terms and conditions shall be printed on the back in light gray:

```
; Example print invoice with general terms and conditions
;
; first of all define letterhead
```

```
DEFINE ID 1 FILENAME briefk1.csp
; now the invoice form
DEFINE ID 2 FILENAME rech1.csp
; and the text of the general terms and conditions in light gray
DEFINE ID 3 FILENAME agb.csp ADDBACKSIDE RGBCOLOR 127 127 127
;
; rules:
; letterhead only on first sheet
RULE FROM 1 TO 1 ID 1
; invoice form from sheet 2 on
RULE FROM 2 ID 2
; general terms and conditions on all sheets on the back
RULE SIDE SIMPLEXBACK ID 3
; reset page counter, if several invoices are combined
; in one print job
RULE JOG RESETCOUNTER
```

6.3.10.2.2 PCL5 to PDF Emulation

Overview

The PCL5 to PDF emulation from FORMS4WORK converts print data that were created for PCL printers so that they can be output on PDF compatible page printers.

Parameters

Jobs

Split Jobs

Enable to split jobs due to the given criteria. Select one or any number of criteria.

A selected criterion will be highlighted. Several criteria can be combined. Possible criteria are:

- Job boundary
- Page boundary
- Simplex/duplex change
- Input tray change
- Output tray change
- Paper size/media change
- Job separation command <ESC>&l1T

Default: disabled (no criteria highlighted)

Include all resources in each split

Enable to include all required resources within each split.

It is not recommended to disable this flag.

Default: enabled

Split port

Select split port from the pull-down menu.

Possible ports are:
- Input
- Output

Default: Input

every <x> page(s)

Enter number of pages after which a split shall be made. This option is only available if Job split criterion 'Page boundary' is selected.

Default: every 1 page

PDF output generation - Compression Level

Set compression level for PDF output.

The higher the compression level the less the size of the PDF output. Levels range from 1 to 9 with 9 as the maximum compression.

Default: OFF

PDF output generation - Image mask method

Set image mask method.

This setting is used to achieve compatibility of certain color images in combination with some printer's PDF implementation. The image type in question uses color palettes in combination with a transparent color value. Possible values are:

- **By Color Index:** Set to transfer the color image with a modified color palette without an extra transparency mask. Use this setting to achieve the lowest amount of output data. Acrobat Reader(TM) V 5.0 cannot display these images, but they can be printed though.
- **Extra Bitmap:** Set to generate an extra transparency bitmap in addition to the color image. This method results in a slight increase of the amount of data. Acrobat Reader V5.0 is able to display the images. (default)
- **Expand To 24-Bit:** Set to expand the image into a 24-bit full color image without a palette or mask. This method has highest compatibility with printers and reader programs at the expense of an increased amount of output data.
- **Paint As Mask:** Set to transfer the image with its attribute set to 'image mask'. For further information about this attribute see Acrobat documentation.

Default: Paint As Mask

Page Output - Face down printing

Select **Face up** or **Face down** printing.

Default: Face up

Page Output - Page order

Select **Page 1 - n** to print the job from the first to the last page.
Select **Page n - 1** to print the job from the last to the first page.

Default: Page n - 1

Stapling

Select the stapling command.

Available options are **Off, Front, Rear** or **Dual**.

Default: Off

Output Destination

Set output destination (paper tray). These options are device dependent.

AUTOMATIC - Standard output bin (determined by the printer)
UPPER BIN - Usually the 'face-down' output bin
LOWER BIN - Usually the 'face-up' output bin
HC OUTPUTBIN to **HC OUTPUTBIN8** - Output bins of a high capacity option

Default: AUTOMATIC

Enable or disable encryption of the document. The access permissions of an encrypted document can be additionally specified.

Encryption

NONE
No encryption will be used.
40 bit (compatibility PDF 1.2, Reader 3.x)
Encrypts the document utilizing RC4 encryption with 40 bit. The document may be viewed with Adobe Reader 3.x and above.
128 bit (compatibility PDF 1.4, Reader 5.x)
Encrypts the document utilizing a stronger RC4 encryption with 128 bit. Additionally there can be more access permissions specified. The document may be viewed with Adobe Reader 5.x and above.

Passwords

Specify a 'user' password (required to open the document) and/or a 'owner' password (required to change permissions and the passwords).
• Opening the document with the correct user password (or opening a document that does not have a user password) allows additional operations to be performed according to the user access permissions specified in the document's encryption dictionary.
• Opening the document with the correct 'owner' password (assuming it is not the same as the user password) allows full (owner) access to the document. This unlimited access includes the ability to change the document's passwords and access permissions.

The document can be encrypted without specifying any password.

User
When a user password ist set, the Adobe Reader or Adobe Acrobat requests this password before allowing acces to the document.
Owner
When a owner password ist set, the Adobe Acrobat requests this password before allowing changing of the password or access permissions.

Permissions

Specify access permissions for the encrypted document.

Allow printing
The document may be printed.

When using 128 bit encryption, additionally the quality level for printing may be specified.
Allow modifying document contents
The contents of the document may be modified.
Allow contents copying, extracting and accessibility
Copy or otherwise extract text and graphics from the document, including extracting text and graphics (in support of accessibility to users with disabilities or for other purposes).
Allow modifying and adding text annotations and form fields
Add or modify text annotations, fill in interactive form fields, and, if '*Allow modifying document contents*' is also set, create or modify interactive form fields (including signature fields).
Allow form field filling and signing
Fill in existing interactive form fields (including signature fields).

Only available when using 128 bit encryption.
Allow document assembling (insert, rotate, delete pages, ...)
Assemble the document (insert, rotate, or delete pages and create bookmarks or thumbnail images).

Only available when using 128 bit encryption.

Enable or disable digital signing of the document. When the document has been digitally signed, any modification of the document will result into invalidating the embedded signature.

There are two alternate formats for storing public key signatures in the signature dictionary of a PDF file. The 'Raw Signature Format' stores certificates and the signed digest directly in the signature dictionary as attributes. The 'PKCS#7 Signature Format' encapsulates the signature and the signed digest into a single PKCS#7 object that is stored in the dictionary. There are advantages and disadvantages to both formats. An advantage of the 'Raw Signature Format' is that the signature is more compact. A disadvantage of using PKCS#7 is the more required space for the PKCS#7 object and the containing not required redundant information.

Digital signature

NONE
No signature will be inserted.
Raw Signature Format (PKCS#1)
The raw signature format stores the signed digest and the signer's certificates directly as attributes in the signature dictionary.
PKCS#7 Signature Format
This syntax use a PKCS#7 object to encapsulate the document signature and signer's X.509 certificates.

Both formats can be verified by the Adobe Reader.

Certificates

Currently only an automatically generated self signed certificate is used.

Appearance

Currently the signature will be always invisible and is always attached to the first page.

These are the user default settings for the PCL environment, i.e. usually the values which can be configured at the printer panel. These values are valid on power on and after a reset as long as the data stream does not overwrite any of these settings.

Paper Size

Select a paper size from the pull-down menu or enter a USER DEFINED paper size.

Determines the default paper size. Also a user defined paper size may be configured. In that case the Width and Height must be given always in portrait view regardless of the given default orientation.

- **Size for portrait in 1/300 Inch**

Define your own paper size.

Width and Height must be given always in portrait view regardless of the given default orientation.

Available only when USER DEFINED is selected as paper size.

Default: 2480/300 inches (Width), 3507/300 inches (Height)

- **edge to edge**

Enable to handle the paper size in full-page mode.

I.e. the PCL logical page size will be enhanced to the physical page size.
A user defined paper size is always handled in full page mode.

Orientation

Select the default orientation.

Default: PORTRAIT

Page Copies

Enter default number of copies for each printed page.

Default: 1

Line Termination

Select the default control code behavior for the following control codes:

<CR> Carriage Return
<LF> Line Feed
<FF> Form Feed

Available options are:
- <CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>
- <CR> = <CR-LF> ; <LF> = <LF> ; <FF> = <FF>
- <CR> = <CR> ; <LF> = <CR-LF> ; <FF> = <CR-FF>
- <CR> = <CR-LF> ; <LF> = <CR-LF> ; <FF> = <CR-FF>
- **<CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>**

The Carriage Return command causes a carriage return, the Line Feed command causes a line feed, and the Form Feed command causes a form feed.

- **<CR> = <CR-LF> ; <LF> = <LF> ; <FF> = <FF>**

The Carriage Return command causes a carriage return line feed, the Line Feed command causes a line feed, and the Form Feed command causes a form feed.

- **<CR> = <CR> ; <LF> = <CR-LF> ; <FF> = <CR-FF>**

The Carriage Return command causes a carriage return, the Line Feed command causes a carriage return line feed, and the Form Feed command causes a carriage return form feed.

- **<CR> = <CR-LF> ; <LF> = <CR-LF> ; <FF> = <CR-FF>**

The Carriage Return command causes a carriage return line feed, the Line Feed command causes a carriage return line feed, and the Form Feed command causes a carriage return form feed.

Default: <CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>

Duplex Mode

Select the default simplex or duplex printing from the pull-down menu.

Available options are:
- SIMPLEX
- LONG EDGE BINDING
- SHORT EDGE BINDING

Default: SIMPLEX

Output Destination

Set output destination (paper tray). These options are device dependent.

AUTOMATIC - Standard output bin (determined by the printer)
UPPER BIN - Usually the 'face-down' output bin
LOWER BIN - Usually the 'face-up' output bin

HC OUTPUTBIN to **HC OUTPUTBIN8** - Output bins of a high capacity option

Default: AUTOMATIC

Resource Path

Define the path from where the PCL5 to PDF emulation can access resources like fonts, etc.

Include JavaScript file

Enable to include JavaScript file.

Enter the name and path of the JavaScript file (.js) or search for it with the Browse function.

Default: disabled

Run emulation in static mode

Enable to run emulation continuously. Disable to finish emulation after each job.

This controls whether the PCL5 to PDF emulation is unloaded between the incoming print jobs (dynamic mode) or whether it remains loaded for the entire duration of the Print processes (static mode).

Default: disabled

6.3.11 Job Controller

6.3.12 PCL to PDF

see PCL to PDF Properties inside chapter IPDS to PDF emulation.

6.3.13 PCL5 to X-Metacode

6.3.13.1 Overview

This document describes all the parameters of the FORMS4WORK PCL5 to X-Metacode emulation. All The parameters are default values. They are in use until their values are overridden from PCL5 commands in the online data stream.

In the configuration dialog for this emulation, you will find the following property pages:

- Emulation
- Resources
- Default Font
- Xerox Printer
- Trays

6.3.13.2 Parameter

6.3.13.2.1 Emulation

Orientation

Select Portrait or Landscape mode for default printing orientation.

Default: Portrait

Page Side

Select Simplex or Duplex printing for default page side.

Default: Simplex

Symbol Set

Select the default symbol set for printing.

Available symbol sets are:
- Roman 8
- PC-850
- Legal, ISO-ASCII
- ISO-Swedish
- ISO-Italian
- ISO-Spanish
- ISO-German
- ISO-Norwegian
- ISO-French
- ISO-Great-Britain
- ISO-8859-1 Latin 1
- PC8-Codepage 437
- PC8-Danish-Norwegian
- Windows Latin 1 / 3.0
- Windows Latin 1 / 3.1
- Ventura International
- Ventura US

Default: Roman 8

Emulation

Select the actual printer emulation.

Available options: PCL5, ASCII and XEROX META. In ASCII mode no PCL5 commands are interpreted. The XEROX META mode is a passthrough mode for special Xerox data streams.

CR / LF Filter

Select the default control code behavior for the following control codes:

<CR> Carriage Return
<LF> Line Feed
<FF> Form Feed

This option can be used to replace carriage return, line feed and form feed commands with combinations of these commands. Especially ASCII data streams generated from UNIX applications sometimes need those replacements.

Available options are:
- <CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>
- <CR> = <CR-LF> ; <LF> = <LF> ; <FF> = <FF>
- <CR> = <CR> ; <LF> = <CR-LF> ; <FF> = <CR-FF>
- <CR> = <CR-LF> ; <LF> = <CR-LF> ; <FF> = <CR-FF>

- **<CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>**

The Carriage Return command causes a carriage return, the Line Feed command causes a line feed, and the Form Feed command causes a form feed, i.e. no replacements of CR, LF and FF.

- **<CR> = <CR-LF> ; <LF> = <LF> ; <FF> = <FF>**

The Carriage Return command causes a carriage return line feed, the Line Feed command causes a line feed, and the Form Feed command causes a form feed, i.e. CR is replaced with CR-LF, no replacements of LF and FF.

- **<CR> = <CR> ; <LF> = <CR-LF> ; <FF> = <CR-FF>**

The Carriage Return command causes a carriage return, the Line Feed command causes a carriage return line feed, and the Form Feed command causes a carriage return form feed, i.e. no replacements of CR, LF is replaced with CR-LF and FF is replaced with CR-FF.

- **<CR> = <CR-LF> ; <LF> = <CR-LF> ; <FF> = <CR-FF>**

The Carriage Return command causes a carriage return line feed, the Line Feed command causes a carriage return line feed, and the Form Feed command causes a carriage return form feed, i.e. CR is replaced with CR-LF, LF is replaced with CR-LF and FF is replaced with CR-FF.

Default: <CR> = <CR> ; <LF> = <LF> ; <FF> = <FF>

Default Tray

Select the default tray for feeding paper.

Only trays which have been made accessible in the Trays configuration page are available.

Default: 1 (Default accessible: 1, 2)

Copies

Define the default number of copies for each printed page.

Values from 1 to 999 are supported.

Default: 1

Edge to edge

Enable to use edge to edge printing.

Some PCL printer models can print the whole page, other models have unprintable areas at the edges of the page. This option allows you to select whether the entire page should be used for the output or whether unprintable areas at the edges of the page should be emulated.

Printing over the entire page should only be enabled if it has been ensured that this option is supported by your application.

Default: disabled

Generate JDE entry

Enable to generate a JDE (Job Descriptor Entry).

This check box is only available in XEROX META mode. If enabled, a JDE entry call to the label 'XASC' is inserted into the data stream at the beginning of each job.

Run emulation in static mode

Enable to run emulation continuously. Disable to finish emulation after each job.

This controls whether the PCL5 to PDF emulation is unloaded between the incoming print jobs (dynamic mode) or whether it remains loaded for the entire duration of the Print processes (static mode).

Default: disabled

Keep downloaded softfonts

Enable to keep downloaded softfonts.

This check box enables the softfont management system of the emulation. The software will remember each softfont downloaded to the printer and prevent the downloading of the same font to the printer twice. The data stream from the emulation to the printer will decrease and the print performance will increase.

It is recommended to use this option only in combination with the IPDS to PCL5 emulation, because it must be guaranteed that the PCL5 softfont names are unique and that the PCL5 softfonts contain the complete character set necessary for printing the whole print job. Otherwise the softfont management system may fail. It is absolutely necessary to deactivate this option, if the PCL5 to X-Metacode emulation is used in combination with the XMCC / FORMS4WORK PCL printer driver.

Softfont prefix

Define or modify the Softfont prefix.

This edit field enables changing the font names the emulation uses to store softfonts at the hard drive of the printer. This allows the simultaneous work of several PCL to X-Metacode emulations under FORMS4WORK without overwriting of softfonts at the printer hard drive.

Changing of font names is only possible if the Keep downloaded softfonts option is enabled. If this option is disabled, all softfonts will be downloaded from the PCL to X-Metacode emulation to the printer using the name-prefix XSFT (i.e. XSFTAA.FNT, XSFTAB.FNT).

Optimize image download

Enable to optimize image download.

If enabled, the emulation remembers the images already sent to the printer. This prevents the multiple download of one and the same image in the same print job. Data volume to be sent to the printer is thus decreased, performance is enhanced. This optimization works only within a job and not for several jobs.

The emulation deletes any information about downloaded images at the end of the job.

Default: disabled

6.3.13.2.2 Resources

Resource Path

Define the path from where the PCL5 to PDF emulation can access resources like fonts, etc.

Installation

- **Installed Resources**

This list shows the installed resource files.

- **Install...**

Click button to add new resources.

- **Delete**

Click button to delete the selected resource.

Be cautious. The selected resource is completely deleted from the disk. Undo is not possible.

6.3.13.2.3 Default Font

These parameters specify the default font for the printouts.

Spacing

Default: Fixed

- **Fixed**

Select Fixed for the default font to have fixed spacing.

- **Characters per Inch**

Define the number of characters per inch, if the default font is a fixed spaced font.

Available values are: 5, 10, 12, 15, 17, 20, 27

Default: 10

- **Points**

Define the height of the characters in points, if the default font is a proportional font.

Available values are: 6, 8, 9, 10, 11, 12, 14, 16, 18, 24

- **Lines per Inch**

Define the number of lines which are printed per one inch on the page.

Changing this parameter increases or decreases the distance between two printed lines.

Available values are: 4, 6, 8, 12

6.3.13.2.4 Xerox Printer

These parameters are used to set the specific values for the Xerox printers. All DJDE and RSTACK settings on this page must be identical with the values configured on the Xerox printer itself.

Xerox Printer

Select the type of Xerox printer to adjust the PCL5 to X-Metacode emulation to the special capabilities of the various Xerox printer models.

The emulation supports Xerox printers 4050, 4090, 4850, 4890, 4135 and 4635.

Default: 4050

Enable Five Word FST Font

Enable for five word FST font.

If it has been enabled, a special Xerox font format is generated by the PCL5 to X-Metacode emulation, which supports font files without any size restrictions.

Option available for Xerox printers 4090, 4850, 4890, 4135, 4635.

Default: disabled

Graphic Compression

Select a graphic compression algorithm the software uses for generating Xerox IMG graphics from the pull-down menu.

The RAW algorithm will generate uncompressed graphics. Using graphic compression will decrease the data stream sent to the printer and increase print performance.

Available algorithms: LIN, HTN, RAW (none)

Default: RAW (none)

DJDE

- **DJDE Definition**

Define a character string to identify DJDE command lines.

This character string, also known as a 'prefix', may be entered in ASCII or EBCDIC characters and must not exceed a length of 20 characters. Changing the entry in ASCII automatically changes the entry for EBCDIC and vice versa.

Default: DJDE (ASCII), C4D1C4C5 (EBCDIC)

- **DJDE Offset**

Define a DJDE offset.

Indicates the number of bytes from the beginning of the record user's data portion until the beginning of the DJDE definition string. It is a numerical value which can vary from 0 to 99.

Default: 0

- **DJDE Skip**

Define a DJDE skip.

Specifies the number of bytes from the beginning of the record's user data portion until the beginning of the DJDE options. This numerical value must be greater than or equal to the output (prefix length + offset value + 1) and less than 128.

Default: (depends on the length of the ASCII string entered above)

RSTACK

- **RSTACK Definition**

Define a character string to classify a record as an RSTACK record.

The number of entered bytes must be less than 34 characters. The characters may be entered both as ASCII and as EBCDIC characters. Changing the entry in ASCII automatically changes the entry for EBCDIC and vice versa.

Default: RSTACK (ASCII), D9E2E3C1C3D2 (EBCDIC)

- **RSTACK Offset**

Define the column from which the RSTACK character string starts in the data record. The numerical value may be between 0 and 99.

Default: 1

- **Generate RSTACK before each job**

Enable to send out a RSTACK command to the printer before each job.

Enable this option, if more than one emulation sends jobs to one common printer.

Default: disabled

6.3.13.2.5 Trays

The paper handling and installed paper sizes of the PCL5 to X-Metacode Emulation can be configured with these parameters. All the values configured here must match with the values configured on the Xerox printer.

Tray

Select the paper input tray of the Xerox printer to configure it for the PCL5 to X-Metacode emulation. Values from 1 to 6 are supported.

Default: 1

Accessible

Enable to make the selected tray accessible for the emulation.

Default: (trays 1 and 2 accessible)

Identification

Enter a character string to identify the tray.

This string may have a maximum length of 10 characters.

Only available if Accessible is enabled.

Default: MAIN (tray 1), AUX (tray 2)

Paper Size

Select the installed paper size for the selected tray.

Only available if Accessible is enabled.

Available sizes are A4 (210 x 297 mm), Letter (216 x 279 mm), Legal (216 x 356 mm) and user-defined.

Default: A4 (210 x 297 mm)

Width

Displays the width of the selected paper size using the selected unit.

Select paper width if user-defined paper size is selected.

Only available if Accessible is enabled.

Default: 297 (A4)

Height

Displays the height of the selected paper size using the selected unit.

Select paper height if user-defined paper size is selected.

Only available if Accessible is enabled.

Default: 210 (A4)

Unit

Select the unit for displaying the chosen paper size.

Only available if Accessible is enabled.

Available units are inch, 1/1440 inch, centimeters.

Default: mm (for paper size default A4)

6.3.13.2.6 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data

are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

Bidirectional Communication

- **Produce ACK/NAK responses**

Enable to produce ACK/NAK responses.

When processing print jobs, which are received through a Channel Input Port and when processing IPDS

print jobs, usually it is necessary to send feedback responses to the host system. In other situations these responses might not be applicable. For highest flexibility it can be controlled by this option whether feedback responses are send to the host system or not.

Default: enabled

- **Send stop code to host after writing <n> sec**

Define the time in seconds after which a stop code ist send to the host.

This applies if a write access to the printer is not successfully completed within this time. Some hosts require responses within a specific time. If for some reason the printer goes offline or is turned off this might lead to problems with bi-directional communication.

Set to 0 to turn off this option.

Default: 0 (off)

The effective time depends on the write timeout set at the output port. I.e. if at the output port a write timeout is set to 10 sec and here 15 sec are used, the second timeout after 20 sec will send the stop code. This is because the first timeout after 10 sec is still in valid range of 15 sec.

Jobs

- **Split job after <n> pages**

Enter number of page breaks after which a job shall be split into smaller parts.

For example, a print job with 5000 pages can be split into 50 smaller print jobs, each consisting of 100 pages. Also if no specific criterion exists for the end of a print job, and therefore all print jobs from the host system are processed in the FORMS4WORK system as a single job, a forced split can be achieved using this parameter.

This option is helpful if the printer is collecting print jobs completely before starting printing. If the job is split into smaller pieces, the time until the first page gets printed is reduced. But it must be sure that some queue optimization of the printer is disabled, if the partially printed job pieces have to be in the right order.

Default: 0 (no splitting)

- **Reconfigure printer after splitting**

Enable to re-initialize the output device at the start of a print job.

If this option is enabled, the emulation will conduct the initialization automatically each time a print job is split.

Default: disabled

6.3.13.2.7 Color

The color options are only available for a PCL to X-Metacode (Color) emulation!

If the configured Xerox Printer is a model 4850 or 4890, the PCL5 to X-Metacode emulation can be configured to create color printouts to support the Highlight Color Printing feature of the 4850 and 4890 printers.

Please note that to create color output, it is essential that you use the FORMS4WORK printer driver in your application programs. If you use other printer drivers, the correct function of the Highlight color print cannot be ensured.

Enable PCL Color Support

Enable or disable creation of Highlight Color data streams for Xerox printers.

Default: disabled

Primary Color

Select what color should be used by the PCL5 to X-Metacode emulation to create Highlight Color printouts.

Xerox Highlight Color printers support printing with one additional color. This color depends on the installed colored toner of the printer.

Available colors are red, green, blue, magenta, cyan, ruby, violet, brown, gray, cardinal, royal.

Default: Blue

Color Mapping Mode

Select the method used to map the PCL colors on the Xerox Highlight color.

The following methods are available:
- Use always Primary color
- Use first color seen in job
- Use first color seen in page

- **Use always Primary color**

All PCL colors are mapped on the color defined in Primary color.

- **Use first color seen in job**

All PCL colors of one print job will be mapped on the first PCL color seen of the print job.

- **Use first color seen in page**

All PCL colors of one page will be mapped on the first PCL color seen of this page.

With this selection you may have to change the printer's toner during printing your job.

Mapping table for text colors

- **Source color**

Select a source color for the re-mapping of PCL colors for text, rectangles and shadings.

Available colors are black, red, green, yellow, blue, magenta, cyan, white.

Default: Black

- **Destination color**

Select a destination color for the re-mapping of PCL colors for text, rectangles and shadings.

Available colors are black, red, green, yellow, blue, magenta, cyan, white.

Default: Black

Mapping table for graphic colors

The mapping of PCL graphics to Xerox Highlight color graphics can be selected here. Each PCL graphic color can be mapped either to Xerox Highlight Color or to black or to white.

Available colors are white, yellow, magenta, red, cyan, green, blue, black.

Default: White

6.3.14 Prescribe to PCL Emulation

6.3.14.1 Overview

This chapter describes all the parameters of the FORMS4WORK emulation Prescribe to PCL5.

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6.3.14.2 Parameters

6.3.14.2.1 Prescribe Defaults (FRPO)

The names enclosed in braces are the FRPO parameter names (Firmware RePrOgramm) of the origin printer.
e.g.
!R!
FRPO C1, 0; CMNT set default page orientation to portrait;
EXIT;

Page orientation (C1)

Determines the default page orientation.

Default Emulation (P1)

Note: The Prescribe emulation does not support the available emulations.

This option sets only the corresponding default font mode (FTMD) of the chosen emulation.
The font mode (FTMD command) determines which attributes will be changed automatically when a bitmap font is selected by the FONT, ALTF or RPF commands.

1 = character spacing
2 = line spacing
4 = fixed or proportional spacing
8 = portrait or landscape orientation

P1 / Emulation mode / Font mode
0 / Line Printer / 15
1 / IBM Proprinter / 0
2 / Diablo 630 / 0
3 / Qume Sprint11 / 13
4 / NEC Spinwriter / 13
5 / Epson FX-80 / 0
6 / HP LaserJet Series II / 13

Font number (C5,C2,C3)

Determines the default font number.

Escape character (P9)

Determines the escape character for entering prescribe mode (usually R for !R!). This character may be entered directly or by decimal code.

Default cassette (R4)

Determines the default input tray (printer specific).

Default stacker (R0)

Determines the default output tray (printer specific).

CR action (P2)

Determines the behavior when a carriage return control code is received (<CR> = 0x0D).

LF action (P3)
Determines the behavior when a line feed control code is received (<LF> = 0x0A).

Symbol set (U6, U7)

Determines the symbol set.

Top margin (A1, A2)

Determines the default margins.

Left margin (A3, A4)

Determines the default margins.

Page length (A5, A6)

Determines the default margins.

Page width (A7, A8)

Determines the default margins.

Lines / Inch (U0, U1)

Determines the default line spacing.

Chars / Inch (U2, U3)

Determines the default character spacing when fixed spaced default font is used.

6.3.14.2.2 Page Offsets

With these setting the complete page may be shifted.

Visible window short edge offset

Shifts the logical page. This value has the same effect like the PCL top offset registration command <ESC>&l#Z

Visible window long edge offset

Shifts the logical page. This value has the same effect like the PCL left offset registration command

<ESC>&l#U

Vector short edge offset

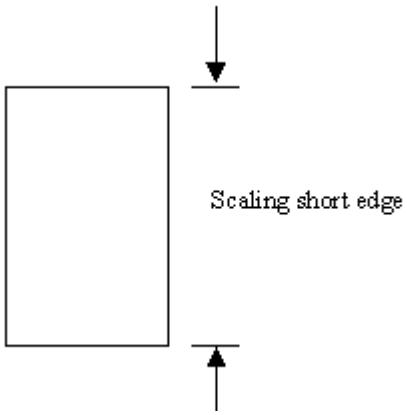
This offset will be added to each positioning command in the context of the short paper edge.

Vector long edge offset

This offset will be added to each positioning command in the context of the long paper edge.

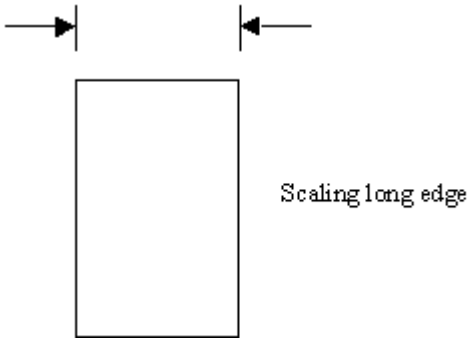
Scaling short edge

If the used printer does not support edge to edge printing, this option can be used to reduce the paper size by the given percentage.



Scaling long edge

If the used printer does not support edge to edge printing, this option can be used to reduce the paper size by the given percentage.



6.3.14.2.3 Duplex Offsets

These offsets are only on duplex back sides valid. They will be added to each positioning command in the context of the paper edge.

The values may be given separately for the duplex mode and page orientation.

6.3.14.2.4 Resources

Resource path

Determines the resource directory for optional resources.

Run emulation in static mode

This switch determines whether the emulation will be loaded and rejected between each print job (dynamic mode) or if it will be hold in memory during the complete lifetime of the print process (static mode).

6.3.14.2.5 Miscellaneous

Edge to edge

Choose the proper printer type in order set the printer automatically in edge to edge mode.

Swallow PCL sequences

Determines if PCL sequences within the prescribe data stream are discarded or not.

- **Off**
All PCL commands will be given transparently to the printer.

- **All**
All PCL commands will be discarded.

- **PCL within prescribe**
Only PCL commands within prescribe are discarded. e.g. (<ESC> stands for the control code 0x1B)
!R! MAP 1,1; <ESC>(8U EXIT;

- **PCL outside prescribe**
Only PCL commands outside prescribe are discarded. e.g.
<ESC>(8U !R! MAP 1,1; EXIT;

Formfeed behavior

Determines how pages will be separated on encountering a Form Feed (0x0C).

- **Formfeed**
The control code 0x0C will be used. This may result into empty pages on consecutively form feeds.

- **Printer reset**
A complete reset sequence will be sent to the printer. Empty pages are avoided but each page might be handled like a print job.

- **Select front page command**
The PCL duplex page side selection command <ESC>&a1G will be used.

Handling of download characters

Determines the behavior with download soft fonts (LDFC command), i.e. the RAM usage of the emulation at runtime.

- **Discard never**
The font will be send to the printer and stored permanently within the RAM of the emulation. i.e. the font may be changed any time with the SFA command.

- **Discard after SFA command**
The font will be released after the first SFA command. i.e. a second SFA command applied to the same font has no effect.

- **Do not store**

The font will be immediately released after sending to the printer. i.e. a following SFA command has no effect.

6.3.15 Program Interface

6.3.15.1 Overview

The Program Interface Emulation (PIE) enables FORMS4WORK to run external programs which emulate, process or change print data in any way. The so modified data can be sent back to FORMS4WORK (default) or be put out from the external program itself, respectively.

PIE runs fully automatically and requires no user interventioning or monitoring.

6.3.15.2 Parameters

6.3.15.2.1 Miscellaneous

Redirect the data to the program

Define the external application or search for it using the '...' button.

Arguments for this program are

Set program options.

The following fields can be used as variables:

<tempin>	Name of temporary input file
<tempout>	Name of temporary output file
<dspconfig>	Name of configuration file
<emuid>	Emulation-ID
<jobname>	Name of the job
<jobnamenoext>	Name of the job (if filename without file extension)
<srcaddress>	Address of senders as IP address or Novell queue name
<username>	Name of user
<destport>	Destination port as queue name from LPD protocol
<destaddress>	Specific device if defined in Logical Printer
<jobid>	Job-ID
<ticks>	Milliseconds since system start
<date>	Date
<time>	Time
<creationtime>	Start time of job
<starttime>	Emulation time of job

Output

Define whether the modified data is further processed by FORMS4WORK or by the external program. Set priorities depending on the task.

Available options are:
- Copy temporary file
- Copy stdout
- Copy stderr
- Program handles output

- Default: Copy temporary file

- **Copy temporary file**

Copy the temporarily created file.

- **Copy stdout**

- **Copy stderr**

- **Program handles output**

Select to let the external program handle the output.

Run

Select the mode in which you wish the external program to be displayed on the screen.

Available options are Normal, Minimized, Hidden.

Default: Hidden

Priority

Select how much computing time shall be assigned to the external program. Capacities can thus be used optimally.

Available options are Idle, Below Normal, Normal, Above Normal.

Default: Normal

Stdout to log

Enable to select how the external application's output is documented in the log file.

Default: disabled

Available options are Info, Extended Info, Warning, Error, Debug.

Default option: Info

Stderr to log
Enable to select how the external application's output is documented in the log file.

Default: enabled

Available options are Info, Extended Info, Warning, Error, Debug.

Default option: Error

6.3.15.2.2 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

6.3.16 Raw to Raw

6.3.16.1 Overview

The Raw emulation does not convert the print data, but simply passes them on unmodified.

6.3.16.2 Parameters

6.3.16.2.1 Common Behavior

Count Pages (PCL, PostScript or ASCII only)

Enable to count the pages of each processed print job for showing actual page count on the display.

This option will only result in proper values, if the print job data is in ASCII format using Form Feed (ASCII code 0x0C) as page break or for PCL print jobs.

Input port data type recognition must be enabled! This setting is part of the Input Interface configuration dialog, tag Data Type.

Default: disabled

- **Split PCL or ASCII jobs after <n> pages**

Define the number of pages after which the emulation shall split a PCL or ASCII job.

Default: 0 (no splitting)

Run emulation in static mode

Enable to run emulation continuously. Disable to finish emulation after each job.

This controls whether the PCL5 to PDF emulation is unloaded between the incoming print jobs (dynamic mode) or whether it remains loaded for the entire duration of the Print processes (static mode).

Default: disabled

6.3.16.2.2 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

Bidirectional Communication

- **Produce ACK/NAK responses**

Enable to produce ACK/NAK responses.

When processing print jobs, which are received through a Channel Input Port and when processing IPDS print jobs, usually it is necessary to send feedback responses to the host system. In other situations these responses might not be applicable. For highest flexibility it can be controlled by this option whether feedback responses are send to the host system or not.

Default: enabled

- **Send stop code to host after writing <n> sec**

Define the time in seconds after which a stop code ist send to the host.

This applies if a write access to the printer is not successfully completed within this time. Some hosts require responses within a specific time. If for some reason the printer goes offline or is turned off this might lead to problems with bi-directional communication.

Set to 0 to turn off this option.

Default: 0 (off)

The effective time depends on the write timeout set at the output port. I.e. if at the output port a write timeout is set to 10 sec and here 15 sec are used, the second timeout after 20 sec will send the stop code. This is because the first timeout after 10 sec is still in valid range of 15 sec.

6.3.17 XES to PCL5

6.3.17.1 Overview

The XES emulation from FORMS4WORK converts print data that were created in the XES programming language of Xerox, so that they can be output on PCL5 compatible page printers.

6.3.17.2 XES Commands

6.3.17.2.1 Supported commands

Syntax	Command
<ESC>+**A**,comment <CR>/<LF>	Font Add
<ESC>**a**X,Y <CR>/<LF>	Text Placement Absolute
<ESC>**b**	Bold Start
<ESC>**+B**,comment <CR>/<LF> font list <CR>/<LF>	Font Delete
<ESC>**+B**,comment <CR>/<LF> form**.FRM** list <CR>/<LF>	Form Delete
<ESC>**c**n	Select Paper Tray
<ESC>**+C**n,comment <CR>/<LF>	Multiple Copies (Collated) (see Note 1)
<ESC>**d**	Tabs Clear Horizontal
<ESC>**e**	Tabs Clear Vertical
<ESC>**+E**n,comment <CR>/<LF>	Multiple Copies (Non Collated)
<ESC>**+F**,comment <CR>/<LF>	Font Load
<ESC>**ga**T;X,Y,r,S1,E1,Sn,En <CR>/<LF>	Graphic Arc
<ESC>**gb**T;X1,Y1, X2,Y2 <CR>/<LF>	Graphic Box
<ESC>**gl**T;X1,Y1, X2,Y2,Xn,Yn <CR>/<LF>	Graphic Line
<ESC>**gp**T;X,Y,r,%1/F1/O1,%n/Fn/On <CR>/<LF>	Graphic Pie Chart
<ESC>**gr**M(or Mx/My),I,R;X,Y, Xn,Yn <CR>/<LF>	Graphic Window Repeat
<ESC>**gw**M(or Mx/My),I,R;X,Y, Sx,Sy <CR>/<LF>	Graphic Window
<ESC>**h**	Superscript Start
<ESC>**i**n	Line Spacing
<ESC>**ip**n <CR>/<LF>	Line Spacing Absolute
<ESC>**j**	Justification Start
<ESC>**k**	Justification Stop
<ESC>**l**	Subscript Start
<ESC>**+M**,comment <CR>/<LF>	Merge Page Load
<ESC>**m**H,T,B,L,R <CR>/<LF>	Margins
<ESC>**n**	Font Change
<ESC>**+n**font name <CR>/<LF>	Font ID Assignment
<ESC>**+n**form name**.FRM** <CR>/<LF>	Form ID Assignment
<ESC>**+N**form name <CR>/<LF>	Form Load
<ESC>**p**	Bold Stop
<ESC>**+P**,comment <CR>/<LF>	Print Job (single font orientation)
<ESC>**q**	Center
<ESC>**+Q**,comment <CR>/<LF>	Print Job (mixed orientation)
<ESC>**r**Dnc	Text Placement Relative
<ESC>**s**	Super/Subscript Stop
<ESC>**+T**,comment <CR>/<LF> data record <CR>/<LF>	Character Reassignment (at job boundaries)
<ESC>**t**n1,n2,..., n8 <CR>/<LF>	Tabs Horizontal
<ESC>**u**	Underline Start
<ESC>**+U**,comment <CR>/<LF>	Font Unload
<ESC>**+V**,comment <CR>/<LF>	Merge Page Unload
<ESC>**v**n1,n2,..., n8 <CR>/<LF>	Tabs Vertical
<ESC>**w**	Underline Stop
<ESC>**+X**,comment <CR>/<LF>	Reset
<ESC>**x**X,Y,L,T,S <CR>/<LF>	Line Draw X

<ESC>**y**X,Y,L,T,S <CR>/<LF>	Line Draw Y
<ESC>**za**X,Y <CR>/<LF>	Baseline Placement Absolute
<ESC>**zb**n	Form Merge Start
<ESC>**zd**	Merge Stop
<ESC>**ze**	Merge Start
<ESC>**zf**	Units 1/300 Inch
<ESC>**zg**	Units 1/60 Inch
<ESC>**zh**c	Form Merge Stop
<ESC>**zj**	Justification Unlimited Start
<ESC>**zk**L <CR>/<LF>	Margin Left
<ESC>**zl**c	Language (see Note 2)
<ESC>**zm**R <CR>/<LF>	Margin Right
<ESC>**zn**T <CR>/<LF>	Margin Top
<ESC>**zo**x	Overstrike Start
<ESC>**zp**	Overstrike Stop
<ESC>**zr**n	Output Tray
<ESC>**zs**nc	Character Spacing Absolute
<ESC>**zt** <CR>/<LF> data record <CR>/<LF>	Character Reassignment (within a job)
<ESC>**zx**form1,form2,form3, form4 <CR>/<LF>	Cycleforms
<ESC>**zya** comment text <CR>/<LF>	Comment
<ESC>**zyd**n <CR>/<LF>	Duplex Start
<ESC>**zye** <CR>/<LF>	Duplex Stop
<ESC>**zyf**n <CR>/<LF>	Duplex Invert Start
<ESC>**zyi**n	Duplex Side Select
=**UDK**=c	User Defined Key (UDK)

Note 1: Only supported if the PCL Printer supports collated copies (@PJL SET QTY = n, see parameter csp60). Otherwise treated as <ESC>**+E**n,comment <CR>/<LF>
Note 2: See parameter Language for supported languages.

6.3.17.2.2 Not supported commands

Syntax	**Command**
<ESC>**+B**,comment <CR>/<LF> graphic.GRA list <CR>/<LF>	Graphic Delete
<ESC>**c**	Channel Select Bisync
<ESC>**+D**	Data Monitor
<ESC>**f**N,M,P1,P2,P3 <CR>/<LF>	Assign Ink Color
<ESC>**gf**P;X,Y,Xn,Yn <CR>/<LF>	Graphic Fill (see Note 1)
<ESC>**+G**	Code Print
<ESC>**+H**,message <CR>/<LF>	Operator Text Message
<ESC>**HT**c1,c2,...c255 <CR>/<LF>	Tabs Horizontal Set Bisync
<ESC>**+J**n <CR>/<LF>	Job Prioritize
<ESC>**+K**n,comment <CR>/<LF>	Page Format Select
<ESC>**+I**n	Job Summary Report
<ESC>**m**H,T1,B1,L1,R1,m T2,B2,L2,R2 <CR>/<LF>	Margins Double Page (see Note 2)
<ESC>**o**	Offset
<ESC>**+R**n,comment <CR>/<LF>	Special Paper Enable
<ESC>**zc**	Complex Print Mode
<ESC>**zi**sc	Ink Change (see Note 3)
<ESC>**zu**X1,Y1,Xn,Yn,T,E,S <CR>/<LF>	Vector Draw
<ESC>**zv**cn1,n2,...,n8 <CR>/<LF>	VFU Stops
<ESC>**zw**	VFU Stops Clear
<ESC>**zyb**c	Bypass Paper Size or Manual Feed Paper Size Select
<ESC>**zyc**	Time Stamp
<ESC>**zyh**mS <CR>/<LF>	Text Highlight
<ESC>**zys**v1,v2,v3,v4 <CR>/<LF>	Shift
<ESC>**zz**n	Plane Prioritize
=**MCK**= command/language/**END** <CR>/<LF>	Mode Switching (see Note 4)

Note 1: Partially implemented. Boxes will be filled only.

Note 2: Partially implemented. (pure text pages only)
Note 3: Partially implemented. Works only with horizontal and vertical lines in 8 distinct shadings (instead 16).
Note 4: Only used for switching explicit into Transparent mode when:
=MCK= EMULATE/PCL/END
=MCK= EMULATE/POSTSCRIPT/END
or XES mode when:
=MCK= EMULATE/XDCS/END
=MCK= EMULATE/XES/END
Otherwise the command is ignored.

6.3.17.3 Parameters

6.3.17.3.1 Common Page Settings

Offsets

Normally a PCL5 printer for output in portrait format will leave a margin of 70 dots (6 mm) on both sides and a header and footer margin of 50 dots (4.25 mm) each, where it cannot print. A Xerox printer, on the other hand, can print over almost the entire area of a page.

Non-printable margin of a Xerox printer (very narrow)

Non-printable margin of a PCL5-compatible printer, if all the parameters are set to '0'. Neither the visible window, nor one of the vectors has been moved.

To define the print area, you can influence the output relative to the "short edge" (in portrait format the horizontal edge of the page using the parameters Visible window short edge offset and Vector short edge offset.

You can influence the output relative to the "long edge" (in portrait format the vertical edge of the page using the parameters Visible window long edge offset and Vector long edge offset.

This illustration shows the effect if the parameter Visible window long edge offset is set to "a" and the other parameters are set to "0". The visible window is moved away from the "long edge" by the value "a"/100 inches.

This illustration shows the effect if the parameter Vector long edge offset is set to "b" and the other parameters are set to "0". The visible window remains unchanged but the vectors have been changed by the value "b/100" inches. This results in the text being moved horizontally.

If you only wish to move your output (not scale it), you can combine these parameters as you wish. The available step value is 1/100 inch.

The FORMS4WORK XES emulation offers these options for both Long edge feed, and Short edge feed. Which group of parameters is used depends on the setting of the paper tray used in Tray Mapping. If the paper is taken from a tray for which the option Short edge feed paper has been set, the parameters of the Short edge feed group will apply, otherwise those from the Long edge feed will apply.

Offsets used with Long Edge Feed

The following parameters are available to achieve a similarly large printable area using PCL5 printers:

- **Visible window short edge offset**

Define a value to move the image area downwards in portrait format in steps of 1/100 inch.

Default: 0.32 inch

- **Visible window long edge offset**

Define a value to move the image area to the right in portrait format in steps of 1/100 inch.

Default: 0.00 inch

- **Vector short edge offset**

Define a value to move the print area downwards in portrait format in steps of 1/100 inch.

Default: 0.00 inch

- **Vector long edge offset**

Define a value to move the print area to the right in portrait format in steps of 1/100 inch.

Default: 0.00 inch

Please ensure that the parameters have been allocated to portrait format and the relevant edges in portrait format do not change. The long edge in portrait format remains the long edge even in landscape format.

Offsets used with Short Edge Feed

The following parameters are available to achieve a similarly large printable area using PCL5 printers as with Xerox printers:

- **Visible window short edge offset**

Define a value to move the image area downwards in portrait format in steps of 1/100 inch.

Default: 0.00 inch

- **Visible window long edge offset**

Define a value to move the image area to the right in portrait format in steps of 1/100 inch.

Default: 0.00 inch

- **Vector short edge offset**

Define a value to move the print area downwards in portrait format in steps of 1/100 inch.

Default: 0.00 inch

- **Vector long edge offset**

Define a value to move the print area to the right in portrait format in steps of 1/100 inch.

Default: 0.00 inch

Please ensure that the parameters have been allocated to portrait format and the relevant edges in portrait format do not change. The long edge in portrait format remains the long edge even in landscape format.

Scaling

In some cases it is not sufficient to simply move the print area. The best solution in these cases is to adjust the XES form to the printable area of the PCL5 printer by means of scaling.

Scaling

- **Scaling short edge**

Define the percentage reduction in the horizontal direction in portrait format and the vertical direction in landscape format.

- **Scaling long edge**

Define the percentage reduction in the vertical direction in portrait format and the horizontal direction in landscape format

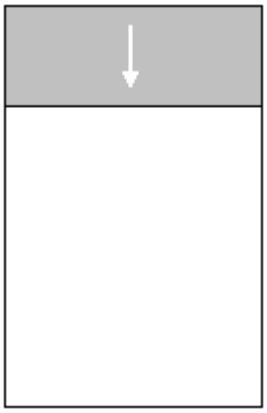
If you wish to output a document in portrait format, the parameter Scaling short edge allows the output to be scaled in terms of its height. The parameter Scaling long edge, on the other hand, allows the output to be scale in terms of its width.

If moving the output does not produce the result you want, you can use the parameters Scaling short edge and Scaling long edge to change the size of the output, in other words to scale it. This will adjust existing XES forms to the printable area of the PCL5 printer.

Please note that all lines and positions can be scaled by this process.

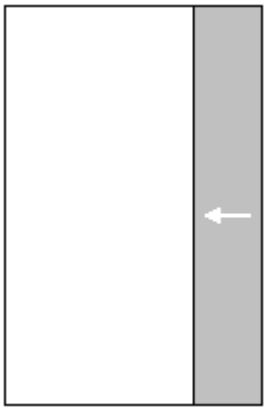
Examples:

Scaling short edge = 15,0



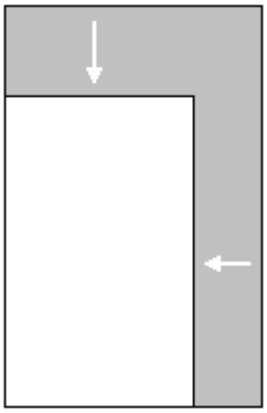
Reduction along the long edge of the page (in other words in the vertical direction) by 15%.

Scaling long edge = 15,0



Reduction along the short edge of the page (in other words in the horizontal direction) by 15%.

Scaling short edge = 15,0 and Scaling long edge = 15,0



Reduction by 15% in both directions.

Number Of Copies

Define the number of default copies.

Default: 1

6.3.17.3.2 Duplex Settings

Mode

Define the standard print mode.

Available options are: Simplex, Duplex short edge binding, Duplex long edge binding

Back Side Offsets (Portrait)

Set offsets that only apply for the back of the page in portrait format.

You can define the following offsets:
- Long edge binding top
- Long edge binding left
- Short edge binding top
- Short edge binding left

The settings will be done for portrait format in units of 1/100 (0.01) inch.

Default: 0.00 (all)

Back Side Offsets (Landscape)

Set offsets that only apply for the back of the page in landscape format.

You can define the following offsets:
- Long edge binding top
- Long edge binding left
- Short edge binding top
- Short edge binding left

The settings will be done for landscape format in units of 1 inch. Minimum steps are 0.01 inches.

Default: 0.00 (all)

6.3.17.3.3 Page Layout

Margins

Set the margins for printing text.

Set margins apply after every reset command (<ESC>+X <CR>/<LF>), as long as no new margins are set by the data stream.

Available options are:
- Standard
- User Defined
- Portrait/Landscape

Default: Standard

- **Standard**

Set to apply the default margins of the Xerox XES 4213 printer.

- **User Defined**

Set the margins to a freely chosen value.

The values apply from the edge of the page and apply to both portrait and landscape formats.

User defined (inch)
- Left margin
- Right margin
- Top margin
- Bottom margin

Default: 0.000 (all)

- **Portrait/Landscape**

Define the margins for portrait and landscape.

Portrait (inch)
- Left margin
- Right margin
- Top margin
- Bottom margin

Default: 0.000 (all)

Landscape (inch)
- Left margin
- Right margin
- Top margin
- Bottom margin

Default: 0.000 (all)

6.3.17.3.4 PCL5 Printer Type

Use this dialog to set various properties and special abilities for the PCL printer you are using.

Pattern Mode

Select a pattern mode.

The Pattern mode setting allows the output of fill patterns on printer which, although they are HP/GL-compatible, are not PCL5-compatible.

Available options:
- PCL5 pattern (PCL5 fill patterns)
- HPGL pattern (HPGL fill patterns)

If you have selected PCL5 pattern and you wish to output the pattern in black, you must select HPGL pattern.

Default: HPGL pattern (HPGL fill patterns)

Fonthead Mode

Select the fonthead mode.

This mode allows printers, which although they can process a PCL5 font header are not PCL5 compatible, to use download fonts.

Available options:
- Resolution specified (PCL5e font header)
- Old style (PCL5 font header)

Default: Old style

Full Page Mode

Select full page (edge to edge printing) mode of one of the listed printer types.

Default: Off

If Full page mode is active, the PJL commands should also be enabled since the edge to edge print is generally set using a PJL command.

If Full page mode for the Xerox 4517 is active, the landscape X-offset should be set to 32/100 inch.

PJL Commands

Select if PJL (HP print job language) commands will be used.

- **Not used**

Select to use PJL commands.

Default: selected

- **Will be used**

Select to use PJL commands.

Default: not selected

Use 'Collated Copy' is used to generate job based copies. It is only available when you select Will be used.

Default: disabled

If the PCL printer you are using supports the PJL collated copy command (`@PJL SET QTY = n`) (for example, HP LaserJet 5 Si Mopier or Xerox N24/N32), this option should be activated. Then the XES multiple copies collated command (`<ESC>+Cn <CR>/<LF>`) can be converted directly. Otherwise this XES command generates Page-based copies (PCL command: `<ESC>&l#X`).

Stitching

Enable or disable stitching.

If the PCL printer you are using supports stitching, this option can be configured here.

Default: disabled

Stitching will be activated by a specific PJL-Command. For that PJL Commands should be activated

If enabled, the following options are available:
- At XES Job boundaries
- At XES Offset command

Default: At XES Job boundaries

- **At XES Job boundaries**

The XES job commands `<ESC>+P` or `<ESC>+Q` enable stitching, the reset command `<ESC>+X` disables it, that is all pages between these commands will be stitched.

- **At XES Offset command**

The XES offset command <ESC>o disables stitching, that is all pages between two <ESC>o commands will be stitched.

- **Mode**

Select a stitching mode from the pull-down menu.

Available options are:
- Dual
- Front
- Rear

Default: Dual

This option sets the position of the staples. With Rotate additional positions can be defined. The settings relate to a page in portrait format.

Dual: Select to insert two staples on the left hand side of the page.
Enable **Rotate** to make on the right hand side of the page.

Front: Select to insert one staple on the left hand side of the top of the page.
Enable **Rotate** to insert one staple on the right hand side of the foot of the page.

Rear: Select to insert one staple on the left hand side of the foot of the page.
Enable **Rotate** to insert one staple on the right hand side of the top of the page.

Alphanumeric ID Command supported

Enable for support of alphanumeric ID command.

If the PCL printer you are using supports the Alphanumeric ID Command <ESC>&n#W, this option should be enabled. This command will be used to access fonts which are saved as PCL macro file to a Hard/Flash disk of the printer.

This parameter usually will be used with parameter Page Buffer Flags - Save using HP PJL file system for swapping out resources to the printer.

If the printer produces lines of text ending with '_cspFM', this typically indicates that the printer does not support the Alphanumeric ID Command.

Default: disabled

Landscape X offset: <x> inches

Define a value for the Landscape X offset.

This command moves the entire output of a landscape page by the entered amount. This offset does not apply for a portrait page.

Default: 0

6.3.17.3.5 Tray Mapping

The two languages XES and PCL5 use different names for tray mapping. This allows individual adjustments to be made. Each XES tray number is converted into a corresponding PCL tray number.

Output Bins

- **Bin <n> map to <x>**

Assign a PCL5 bin name to each XES bin number by selecting an entry from the 'map to' list field.

Available bins to map to: Ignore (no mapping), Upper bin, Lower / rear bin, bin 1, ..., bin 9

Default: 0 (bin) map to Upper bin

Input Trays

- **Tray <n> map to <x>**

Assign a PCL5 tray name to each XES tray number by selecting an entry from the 'map to' list field.

Available trays to map to: Ignore (no mapping), Paper from main tray, Paper from manual input, Envelop from manual input, Paper from lower tray, Paper from optional paper source, Envelope from optional envelope feeder, Tray 7, ... Tray 25

Default: 0 (tray) map to <Ignore> (no mapping)

The two languages XES and PCL5 use different names for tray mapping. This parameter is available to compensate for these different names.

- **Input tray switching**

Enable for input tray switching.

Default: enabled

Paper Size To Input Tray Assignment

- **Tray <n> contains <x>**

Assign a paper size to a paper input tray.

Available options: Undefined format, DIN A4, DIN A3, Lexmark DIN A5, DIN A5, User defined format

When a paper size has been assigned, a PCL page size command (<ESC>&l#A) is also sent to select the tray.

If no paper size has been assigned (Undefined format), no PCL page size command is sent.

If User defined format is assigned, an arbitrary paper size can be set using the appropriate parameters.

Default: Tray 0 contains Undefined format

- **Short edge feed paper**

Enable to allow compatibility to various XES printers (for example, Xerox 3700 or Xerox 4235).

Default: disabled

If a paper input tray has been defined as a short edge feed paper, a portrait font must be selected, for example, to print a landscape page, or a landscape font to print a portrait page.

The four extra offset parameters for Short edge feed under Common Page Settings (Visible window short edge offset, Visible window long edge offset, Vector short edge offset, Vector long edge offset) apply for a page printed in this way. The four offset parameters for Long edge feed apply for all others. This means that the outputs from different paper trays may be offset independently of each other.

If DIN A5 has been assigned, the page is printed in landscape (PCL page orientation command <ESC>&l#O is used). In addition the vector offset DIN A5 parameter apply, using which the page can be offset.

Short edge feed paper should not be used in conjunction with DIN A5 because the orientation has

already been changed by the page orientation command.

Defaults

- **Default Stacker**

Define the standard output bin.

The XES tray number is given; in other words this number is converted to the appropriate PCL number depending on the mapping.

Default: 0

- **Default Cassette**

Define the standard paper input tray.

The XES tray number is given; in other words this number is converted to the appropriate PCL number depending on the mapping.

Default: 1

6.3.17.3.6 Performance

Data Processing

- **Max block size for reading**

Define the maximum size in kilobytes which the emulation shall attempt to read at the Input port by means of one read access.

If there are fewer data there, only so many bytes are read as actually exist. If there are already more data there, the maximum number of data that will be read corresponds to this value, and the remaining data are not read until the next read process.

Frequent read access attempts with few data will reduce the system performance.

Default: 32 KB

- **Block size for output buffering**

Define the minimum number of kilobytes which must exist for output before a write access is attempted.

The data processed by the emulation are passed to the output port. To reduce the number of write access attempts at the output port, a value can be entered here to define the minimum number of kilobytes which must exist for output before a write access is attempted. To turn off buffering set the value to 0.

Frequent write access attempts with few data will reduce the system performance.

Default: 32 KB

Timing

- **Delay before next try on read error**

Define the delay before next try on read error.

If a problem occurs at the input port during reading the data, the emulation waits for the number of milliseconds set here before its next read attempt.

This prevents a slow input port slowing down the system by frequently repeated read attempts.

Default: 1000 msec

- **Delay before next try on write error**

Define the delay before next try on write error.

If a problem occurs at the output port during writing the data, the emulation waits for the number of milliseconds set here before its next write attempt.

This prevents a slow output port slowing down the system by frequently repeated write attempts.

Default: 10 msec

- **Timeout for shutdown**

Define the time in milliseconds which the Print process shall wait for completion of the emulation thread.

If the set time has elapsed before the emulation thread has been terminated correctly by itself, it will be terminated by the Print process.

Ensure that you set an adequate time to allow the emulation thread to terminate by itself. The set value should not generally be changed.

Default: 5000 msec

Bidirectional Communication

- **Produce ACK/NAK responses**

Enable to produce ACK/NAK responses.

When processing print jobs, which are received through a Channel Input Port and when processing IPDS print jobs, usually it is necessary to send feedback responses to the host system. In other situations these responses might not be applicable. For highest flexibility it can be controlled by this option whether feedback responses are send to the host system or not.

Default: enabled

- **Send stop code to host after writing <n> sec**

Define the time in seconds after which a stop code ist send to the host.

This applies if a write access to the printer is not successfully completed within this time. Some hosts require responses within a specific time. If for some reason the printer goes offline or is turned off this might lead to problems with bi-directional communication.

Set to 0 to turn off this option.

Default: 0 (off)

The effective time depends on the write timeout set at the output port. I.e. if at the output port a write timeout is set to 10 sec and here 15 sec are used, the second timeout after 20 sec will send the stop code. This is because the first timeout after 10 sec is still in valid range of 15 sec.

Jobs

- **Split job after <n> pages**

Enter number of page breaks after which a job shall be split into smaller parts.

For example, a print job with 5000 pages can be split into 50 smaller print jobs, each consisting of 100 pages. Also if no specific criterion exists for the end of a print job, and therefore all print jobs from the

host system are processed in the FORMS4WORK system as a single job, a forced split can be achieved using this parameter.

This option is helpful if the printer is collecting print jobs completely before starting printing. If the job is split into smaller pieces, the time until the first page gets printed is reduced. But it must be sure that some queue optimization of the printer is disabled, if the partially printed job pieces have to be in the right order.

Default: 0 (no splitting)

- **Reconfigure printer after splitting**

Enable to re-initialize the output device at the start of a print job.

If this option is enabled, the emulation will conduct the initialization automatically each time a print job is split.

Default: disabled

6.3.17.3.7 Emulation

Xerox Printer

Select 'No specific' for no printer emulation.
Select 'Use Following' and the XES printer(-s) you wish to emulate.

The emulation may use the peculiarities of the following Xerox XES printer models:
2700
3700
4010
4030
4045
4046
4213
4235

- **Xerox 4030**

Enable to make the Merge Start Command '<ESC>ze' not terminate a constant page definition.

Default: disabled

- **Xerox 4045**

Enable to emulate Xerox 4045 XES peculiarities.

Text lines with several different font sizes are treated slightly differently. A font is considered even if it is only selected, but not used, within the line. Activation can therefore influence the line spacing between text lines containing different fonts.

Default: disabled

- **Xerox 4046**

Enable to keep an activated user defined table (<ESC>zlH) active even after a reset (<ESC>+X).

Default: disabled

Xerox 4213

Since the emulation also entries fonts with the same names in a list, the selection process can be controlled for fonts entered more than once with the same name. As default the last loaded font is used with the required name. If this parameter has been activated, the first loaded font with the required name in the list is used.

Xerox 4235

The Assign Font ID command '<ESC>+0FontName<LE>' assigns and selects the font 0 immediately. This is valid for ID 0 only!

Because the Xerox 4235 allows a larger page length than physically possible, the page length of a Set All Margin command '<ESC>m...<LE>' will not be restricted to the physically possible size.

Constant pages '<ESC>+M<LE>' are only printed if the page contains printable data.

Forms '<ESC>+N<LE>' are always printed when Merging '<ESC>zbn' is allowed, regardless whether the page contains printable data or not.

Line ending

Defines the properties at the line end. In many applications, for example, only CR's are used as the line ending code. In this case Auto LF (automatic line feed) must be selected. A similar thing applies for Auto CR (automatic carriage return).

Data encoding

The following settings are possible:

ISO 6937 Encoding
ASCII (Default)
IBM PC code page 437
IBM PC code page 850
ISO 8859/1 Latin 1 (ANSI)

Default Job

Defines the default properties of the emulation if there is no job command in the data stream.

<ESC>+P	Only one orientation (portrait or landscape) is allowed on the page.
<ESC>+Q	Both orientations are allowed on the page.

Default Font

Defines the default font and therefore the page orientation, if there is no font selection command in the data stream. The font number assignment is shown in the font status page (XES Command: <ESC>cspstat<CR><LF>). Alternatively the font name can be specified.

Font Rotation

If you have marked this option, all download fonts are rotated (portrait to landscape and vice versa). If the font name contains the character chain "-P" or "-L" (a non-binding indicator for portrait/landscape in the name), "P" is converted to "L" and vice versa.

This parameter does not affect internal fonts.

Examples:

The XES portrait font Univers10iso-P is sent to the printer with activated font rotation by the emulation. In fact the font is converted to a landscape font and renamed to Univers10iso-L.

The XES portrait logo font MYLOGOP is sent to the printer with activated font rotation by the emulation. In

fact the font is converted to a landscape font but keeps its name MYLOGOP.

Language

Forces the emulation to load a predefined, country-specific table as long as no XES select language command (<ESC>zlc) appears in the data stream. The following tables are available:

Character Set	Note
U.S. English	default
U.K. English	
French	
Dutch	
Spanish	
Italian	
Danish	
Norwegian	
Finnish/Swedish	
German	
Swedish	not supported
Belgian	not supported
French Canadian	
Portuguese	not supported
Latin American	not supported
User defined table	

The Language parameter is only valid if Data Encoding is set to ASCII.

6.3.17.3.8 Resources

The settings on this page influence the treatment of resources (fonts, forms, etc.). The XES to PCL5 emulation is able to store frequently used resources locally or externally on the printer.

The following files may be optionally present in the resources directory (Path).

RESOURCE.XES	may contain fonts and forms in XES syntax
PREJOB.XES	may contain arbitrary commands in XES syntax
POSTJOB.XES	may contain arbitrary commands in XES syntax
1.XES ... 9.XES	1 ... 9 profiles, may contain arbitrary commands in XES syntax

Depending from the parameter Loading the file RESOURCE.XES will be read and the XES commands interpreted. Before or after processing a print job the files PREJOB.XES and POSTJOB.XES will be used. When a XES reset command encountered in the print data stream one of the profile will be used.

Resource Path

The directory is to be entered, which contains the resources that are to be sent to the printer.

This parameter can not be changed while configuring a remote system.

Installation

The list contains resources files which have already been installed. By selecting Install..., new files may be added to the list.

This parameter can not be changed while configuring a remote system.

Loading

Load only once

The resources file RESOURCE.XES are only converted and sent to the printer for the first job.

Reload every Job

The resources file RESOURCE.XES are converted and sent to the printer for every job that is received.

Profile

A profile may be selected from nine possible (the corresponding file 1.XES ... 9.XES is to be selected). If no profile has been selected, the values set in the configuration dialog are used as the default settings. If a profile has been selected, the XES commands in this profile file are also interpreted. A profile is executed immediately after each XES reset command (<ESC>+X).

Using a profile arbitrary, additional default settings, such as line spacing, form overlaying, etc. can be adjusted to suit individual needs.

This parameter can not be changed while configuring a remote system.

Page Buffer Flags

Defines the properties of the emulation in terms of XES matrix graphics windows (for example XES command graphic window repeat <ESC>gr...) and the storage of resources.

Matrix graphic windows are stored in the RAM memory of the printer in the form of PCL macros, in other words they can be printed on the page several times but not modified (for example no X or Y zoom). With Page Buffer Flags you can modify the behavior of graphic windows and combine different types which are making sense.

Graphic window throughput

Matrix graphic windows are loaded into the RAM memory of the printer as PCL matrix graphics, in other words they can only be printed once on the page and not modified. (For PCL printers with a small memory)

Graphic window hold in memory

Matrix graphic windows are held in the RAM memory of the emulation, in other words they can be printed several times on the page and also modified. (<ESC>gr... is fully supported)

Matrix graphic windows within a constant page (<ESC>+M) or a form (<ESC>+N) are always stored in the RAM memory of the printer as PCL macros (see Partial), regardless of the setting of Page buffer Flags.

Save fonts to local disk

Fonts will be saved automatically in Sixel format to the hard disk of the FORMS4WORK server using their name and the extension *.FNT. They will be resent to the printer if required. (Any font load command as <ESC>+F or <ESC>+A will be removed)

Save forms to local disk

Constant forms will be saved automatically to the hard disk of the FORMS4WORK server using their name and the extension *.FRM. They will be resent to the printer if required. (A form load command <ESC>+N and form end Command <ESC>+X, FF, etc. will be removed).

Save fonts to printer flash

Fonts will be saved in PCL bitmap font format to the optional external FLASH memory of the printer. The Emulation always saves its actual state to the local disk of the FORMS4WORK server in a file named FONTTAB.XES. This file contains font metrics which are used by the emulation. This reduces the amount of data transfer, because the fonts have to be sent only once to the printer.

Save fonts to printer disk

The meaning of this parameter equals to Save fonts to printer flash, but the font will be saved to the hard disk however.

Save to Lexmark Optra S

Lexmark Optra S. Defines the target printer for the external saving.

The parameter must be enabled to use PJL commands.

HP PJL file system commands (@PJL FSDOWNLOAD ...) will be used for saving fonts to a hard/flash disk.

The target printer must support the @PJL file system command (@PJL FSDOWNLOAD ...) and the Alphanumeric ID command <ESC>&n#W. Additionally you have to enable the parameter and the parameter .

When saving resources externally PJL commands will be used. These commands can occasionally separate a page into several jobs. To avoid this behavior you should respect the following procedure when saving resources externally:

1. Configure the emulation to save resources externally.
2. Send all resources to the Emulation.
3. Configure the emulation for normal operation.

With this procedure the resources will be saved externally and known by the printer. Now you can send your print jobs without resources.

Examples:

To save the fonts to an Optra S flash externally and to save the forms to the local hard disk of the FORMS4WORK Server automatically the following Page Buffer Flags have to be set:

Save forms to local disk
Save fonts to printer flash
Save to Lexmark Optra S

To save the fonts to a flash disk of a HP LaserJet 4000, the parameter Page Buffer Flags has to be set as follows:

Save using HP PJL file system
Save fonts to printer flash

Additionally the checkbox located at dialog page PCL5 Printer Type must be checked.

Drive Number

Determines the partition number of the printer hard disk when parameter Page buffer Flags is set to 'Save fonts to printer disk' and 'Save using HP PJL file system'. In this case the fonts will be saved to the directory

[DRIVENUMBER]:\PCL\MACROS

where the currently set number will be used instead of [DRIVENUMBER].

6.3.17.3.9 Common Behavior

The settings on this page define the general behavior of the emulation.

Suppress Form Feed

Defines how the pages are to be separated at a form feed (0x0C).

Form Feed

The control code 0x0C is output. This may generate several empty pages if there are consecutive form feeds.

Printer Reset

A complete reset sequence is sent to the printer. This prevents empty pages.

Select Front Page Command

The PCL duplex command <ESC>&a1G is sent to the printer.

Automatic

The converter decides about page ejection. Empty pages and unnecessary reset sequences will suppressed.

Automatic (no reset)

Like Automatic. Further XES job commands (e.g. <ESC>+X) generate no PCL job commands (e.g. <ESC>E or <ESC>%-12345X).
This method can increase printing speed of some PCL printers with optional output trays (finisher).

Shift Logical Page

If this option has been activated, the emulation automatically moves the visible window, if a position has been occupied outside the window limits. A manual adjustment of the parameters and is not necessary in this case.

Some printer types from various manufacturers may create an undesirable print image if this parameter has been activated.

Fonts

Compress PCL Bitmap Fonts

The PCL bitmap-fonts are sent to the printer in a compressed format. This may be useful if the font resources are to be stored externally on the printer and the memory there is limited (for example with a 2MByte flash DIMM).

Print Font List with Example

A specimen text is printed in the appropriate font on the font status page (XES command: <ESC>cspstat<CR><LF>).

Exclude Font ID's

This allows individual definition of intervals of PCL font ID's that should not be used by the emulation. With the default setting the emulation starts for PCL fonts by the assignment of the ID 0 and continues in ascending order to 32767. If for example 30 – 100 and 450 – 500 is defined here, the emulation no longer uses fonts with ID's 30 –100 and 450 – 500.

Macros

Exclude Macro ID's

This allows individual definition of PCL macro ID intervals that should not be used by the emulation. With the default setting the emulation starts for PCL macros by the assignment of the ID 0 and continues in ascending order to 32767.

Split job after <n> times XES reset command

This setting causes a split of an incoming XES print job after a XES reset command has been detected <n> times. For example, a large print job can be split into smaller print jobs. Also if no specific criterion exists for the end of a print job, and therefore all print jobs from the host system are processed in the $ProductName$ system as a single job, a forced split can be achieved using this parameter.

Reconfigure printer after splitting

If you use the option Split job after <n> times XES reset command, it may be necessary to re-initialize the output device at the start of a print job. If this option is active, the emulation will conduct the initialization automatically each time a print job is split.

6.3.18 X-Metacode to PCL

6.3.18.1 Overview

This chapter describes all the parameters of the FORMS4WORK emulation X-Metacode to PCL5. All The parameters are default values.

In the configuration dialog for this emulation, you will find the following property pages:

- Start Command
- System Generation
- Miscellaneous
- Resources
- Messages
- Finisher Options
- Color

6.3.18.2 Parameter

6.3.18.2.1 Start Command

START Command

This option allows setting of default parameters for a report. This is similar to the original START command of a Xerox 4050/4090 printer.

```
( START [[jde][,,jdl] [,,[copies][,FORM=form]]] )
```

JDE/JOB

Field for the job descriptor entry.

JDL

Field for the job descriptor library.

Copies

Defines the number of copies. If a value is given other than zero, this value overwrites any given value specified in a job descriptor entry or within a DJDE command.

Form

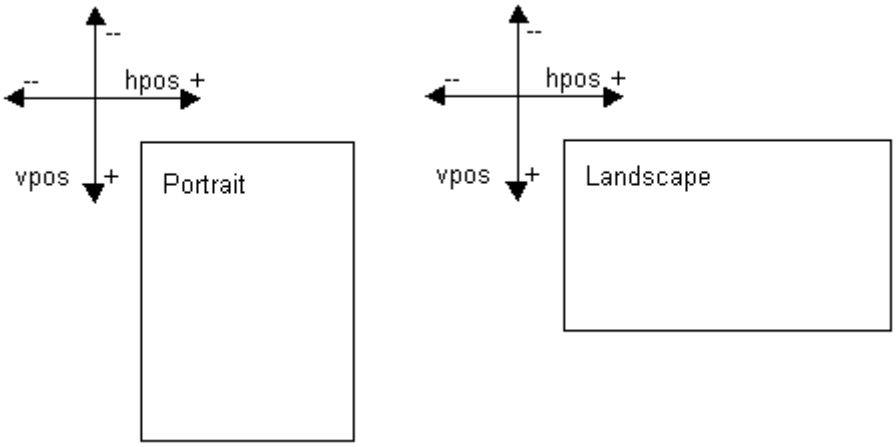
Specifies a FORM as overlay for printed pages.

Process Mode

The processing mode of the emulation. Currently only Online is supported.

Y, X Offset (in 1/300 inch)

This is a common vector offset (Y = vpos, X = hpos) to shift the complete content of a page. The offset may be given for portrait and landscape pages independently with signed values according to the following scheme:



Destination Printer Feature

Enables or disables special features which the destination PCL printer may utilize.

Use Collating Multiple Copies (@PJL SET QTY=n)

Activating this option produces copies on a job basis i.e. the whole print job can be copied.

If the printer does not support this feature, copies are made on page base, i.e. each page will be copied.

Emulation generates copies

Copies will be produced by the emulation.

This results into much bigger jobs (bad performance). Should be activated only if the order of the copies does not match compared to the origin system.

Use PCL jogging command

If activated, a PCL command (depends on given <Printer type>) will be used to jog (OFFSET) the page. If <No Specific> is set, the PCL Job Separation Command <ESC>&l1T will be used.

Printer type

Optimizes the data output for the given printer type. If <No Specific> is set only standard PJL und PCL commands will be used.

Edge to Edge

Activates the edge to edge printing feature of the selected printer model.

6.3.18.2.2 System Generation

JSL File Name

The name of the used Job Source Library file. The file must contain all job description entries and libraries (JDE, PDE, CME, ..., etc.), to which a report may reference to via DJDE.

In contrast to the origin Xerox 4050/4090, the JSL file needs no incremental line numbering. The lines are interpreted from top to down and left to right within the given column width.

JSL Column Width

Specifies the maximum column position for interpreting a line. If this value is set to 0, the line will be interpreted up to the terminating line end (<CR><LF>).

Treat constant strings without qualifier (...) as ASCII (A...)

Usually a string constant without qualifier is handled as EBCDIC, therefore

`IDEN PREFIX='DJDE'` is the same like `IDEN PREFIX=E'DJDE'`

If this option is activated, the system handles a string constant without qualifier as ASCII, therefore

`IDEN PREFIX='DJDE'` is the same like `IDEN PREFIX=A'DJDE'`

This is sometimes useful in LAN environments, if data has been already translated from EBCDIC to ASCII e.g. by an Codepage Filter.

Paper Size

Specifies the default paper size.

Use PCL paper size command (<ESC>&l#A)

If this option is activated a paper size command will be send to the printer, otherwise not.

Feed (input tray select assignments)

Assigns selection strings to any cluster or stock set name. To edit control bytes, the exclamation mark '!' is used for indicating a 2 digit hex value (e.g. `!1B = 27 dec.`). Two consecutive exclamation marks must be used to get the '!' itself (!! = !).

If a sequence for <Duplex alias> is given, this alternative tray will be used on duplex printing, otherwise only the <Selection string> will be used.

Example: The definition `MAIN = !1B&l1H` results into the PCL paper source selection string `<ESC>&l1H` when a `DJDE FEED=MAIN` is encountered.

Jobs

Pause print process on OTEXT=(...,WAIT)

When activated, the print process at the FORMS4WORK server will be suspended every time a DJDE OTEXT=(...,WAIT) command is encountered.

The operator must observe the printprocess and manually set the processing state to continue.

Notify channel host on error condition

When activated, the channel host will be informed with a 'intervention required' (on channel input only) whenever a error message (usually red) occur during processing the job.
NOTE: Any data after a error condition will be discarded.

The operator must abort the failing job at the host and restart the printprocess (STOP/START) on the FORMS4WORK server before any new job is released at the host.

Split jobs

Activates job splitting. There are multiple split criterias which may be combined.

Report boundary
Splits jobs on given report boundaries (e.g. BANNER or RSTACK criteria).
Page boundary
Splits jobs on every given page count.
ROFFSET detection
Splits jobs at page boundary whenever a ROFFSET criteria will be true.
Collated copy change
Splits jobs at page boundary whenever the copy count changes within collated mode.
Finishing change
Splits jobs at page boundary whenever the finishing device changes.
OTEXT=(...,WAIT)
Splits jobs at page boundary whenever a DJDE OTEXT=(...,WAIT) command is encountered.
Trigger string
Splits jobs at page boundary whenever the given trigger string matches within the job data.

Include resources in each split

When activated, all necessary resources are included in each part of the splitted jobs. It is not recommended to deactivate this option.

Split port

Output
The jobs will be splitted at the output port, i.e. the printer receives multiple smaller jobs, but on the FORMS4WORK server only one job will be shown.
Input
The jobs will be splitted at the input port, i.e. the printer receives multiple smaller jobs, also on the FORMS4WORK server multiple jobs will be created and shown.

6.3.18.2.3 Miscellaneous

Job name

Modify

The system generated job name may be modified.

<NONE>
Nothing will be appended.
Add page count
The amount of printed pages or sheets will be appended to the jobname (*_<pagecount>).
Add sheet count
The amount of printed pages or sheets will be appended to the jobname (*_<sheetcount>).

Replace system job name with HRPTNA field of RSTACK or BANNER

When a HRPTNA statement withithin the current JDL/JDE is given, this extracted field will be used as job name.

Replace system job name with extracted trigger data (offset, length)

The job name will be replaced with a sequence triggered from the job data, e.g. from a banner page. The extracted sequence will be **length** bytes from the **offset** relative to the matching trigger end.

Accounting

If activated, a ASCII file containing job information (e.g. number of printed pages, etc.) will be generated within the current resource directory. For each job a line with comma separated fields will be generated.

For advanced users only

Here may be done some special settings which are usually not necessary or might be harmful for normal operation.

Suppress macro control commands

During converting of the data stream no PCL macro commands will be used (<ESC>&f#X). It is not recommended to activate this.

Remove image macro after usage

Raster images are usually sent as permanent macro to the printer and called on usage. If this option is activated the macro will be deleted immediately after usage.

Print FORMS before page data

Usually the variable data is printed first and then the form will be invoked (overlay). If this option is activated the form will be invoked before the variable data (underlay).

Embedd form name via Alphanumeric ID Command

When active, the DJDE form name will be embedded into the generated PCL macro via the PCL Alphanumeric ID Command '<ESC>&n#W' using the operation code 'z', e.g. for the form 'TEST.FRM', a '<ESC>&n5WzTEST' would be embedded. This shoud be usually ignored from a PCL interpreter.

For oversized paper only

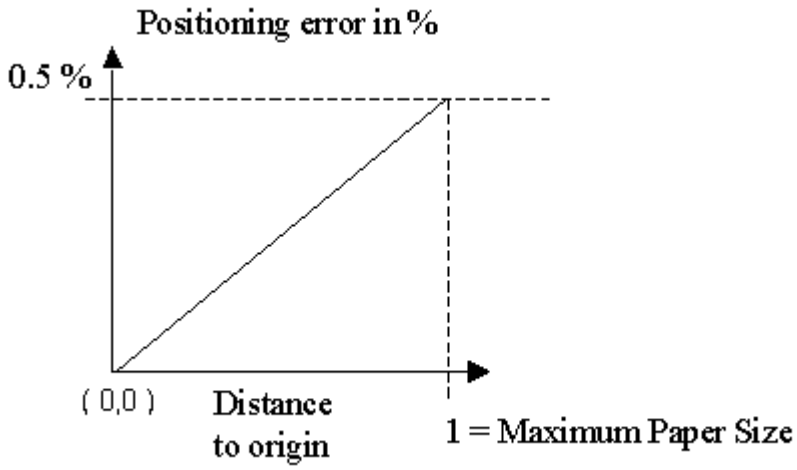
These settings are only valid for jobs using a paper size where the dimension X > Y
e.g. PAPERSIZE=(X,Y) = (17,14)

IMAGE Y,X Offset

Each raster image will be shifted with the given offset relative to the real position.

TEXT BEGIN vpos error correction

On large paper sizes, e.g. 17 x 14 Inch, a error correction may be necessary. The inserted value must be the expected error at the maximum paper size in 1/10 percent, e.g. 5 for 0.5 %. It is a linear error behavior in dependence to the distance assumed.



6.3.18.2.4 Resources

These settings affect the treatment of resources like fonts, images, forms, etc..

Resource Path

Specifies the directory, which contains the resources. Also dynamically loaded resources are saved in this directory.

Resource Script Filename

Specifies the name of the resource script files. These files contains information about resources and must reside in the given resource path.

Global

Contains the standard resource entries.

Target

Contains the dynamically via data stream loaded resource entries.

Run emulation in static mode

This controls whether the emulation is unloaded between the incoming print jobs (dynamic mode) or not. If not (static mode), the emulation remains loaded for the entire life time of the print processes.

This affects the behavior of downloading resources, since resource script files are read and interpreted at loading time (initialization) of the emulation.

6.3.18.2.5 Messages

The emulation uses 4 types of messages (Errors, Warnings, Messages, Trace Messages) which correspond to the log messages (Errors, Warnings, Info, Debug Info) of the FORMS4WORK Client. Please see also chapter Log Level.

Due to the fact that the emulation uses the log mechanism of the FORMS4WORK Client, the corresponding log message must be enabled in the Log Level Tab of the print process, in order to enable a message type of the emulation.

In addition, every message type has a verbose level and a category to allow more flexibility on displaying messages. The level uses a range from 0 to 99, where 0 has the highest priority and 99 the lowest. This allows to turn on/off several types of messages. Important messages usually have a verbose level of 0.

A specific message type can be switched off completely by setting the verbose level to -1.

It is not recommended to switch off the error and warning messages.

Verbose Level

Sets the current verbose level of the message type.

Warning

Show only once
When activated, no multiple warnings with the same text are given out.

Category

Sets the current allowed category of the message type.

A selected (highlighted) category is activated, a deselected is deactivated.

A message will be displayed if the verbose level of the message is less or equal to the currently set verbose level and its category corresponds to the currently set category, that means:

```
(Verbose Level of message) <= (current set verbose level)
AND
(category of message) == (current set category)
```

6.3.18.2.6 Finisher Options

These options are printer dependent.

Choose always the proper 'Printer type' (if known) within the tab 'Start Command'. If 'Printer Type' is set to 'No specific', a common HP PJL command will be used to activate the given option (e.g. for stapling @PJL SET FINISH=STAPLE, in this case the staple options TOP, BOTTOM or BOTH are ignored).

Staple position

Determines the staple options. Stapling will be activated by the option OUTPUT STAPLE=YES

Bookletmaker

Determines the bookletmaker options. The bookletmaker will be activated via the option OUTPUT SF1FUNCTION=YES or DJDE SF1FUNCTION=YES

Punch Position

Determines the puncher options. The puncher will be activated via the option OUTPUT SF2FUNCTION=YES or DJDE SF2FUNCTION=YES

6.3.18.2.7 Color

Output

Black/White

The emulation ignores all Highlight color information. The output contains no PCL color command.

Color

The Highlight color information will be converted into corresponding PCL color commands using the PCL Imaging Mode (<ESC>*v#W).

Simple color

Same as *Color* but using the PCL Simple Color Mode (<ESC>*r#U), i.e no user defined palettes are allowed to adjust the *Text color* or *Image color*.

ISL Filename (Ink Source Language)

The optional name of the used Ink Source Language file. The file must contain all used ICATALOG entries.

The standard ICATALOG definitions 'DFAULT' , 'XEROX' and 'XEROX1' are known within the emulation. As long as there are no other or different definitions, no ISL file (<NONE>) will be necessary.

ISL column width

Specifies the maximum column position of interpreting the line. If value = 0 is given, the line will be interpreted up to the terminating line end (<CR><LF>).

IRESULT (default)

Determines the real IRESULT value (BLACK or COLOR), if a DJDE IRESULT=DEFAULT is used.

The IRESULT option will be honored only within 2 color images, because in this case a distinction on pixel boundary can be done. Otherwise the color of overlapping objects depends on the order they are printed.

Text color

Allows to adjust the RGB values of a primary color. This adjustment is valid for objects like text, horizontal and vertical lines and logos.

Image color

Allows to adjust the RGB values of a primary color. This adjustment is only valid for image objects.

6.4 Filters

6.4.1 Overview

Overview

You can define various filters for input and output to compensate for incompatibilities between the host system and the destination print system in the character sets and for non-supported commands or character string in the print data before and after conversion by an emulation.

The following filters are available:

- Barcode Filter
- Codepage Filter
- Conditional Stringchange Filter
- Field Scanner Filter
- Job Copier Filter
- Job Separator Filter
- Recordchange Filter
- Stringchange Filter
- Textextractor Filter

6.4.2 Barcode Filter

6.4.2.1 Application

The FORMS4WORK Barcode Filter enables PCL printers to print a wide variety of the most popular industry standard bar codes, including 2D-barcodes like PDF 417 and Datamatrix . The FORMS4WORK Barcode Filter primarily generates bar codes algorithmically in PCL 5 emulation. FORMS4WORK Barcode Filter includes support for:

- OCR-B as a scalable font
- independently scalable bar heights and widths
- the capability to embed text with selectable positioning
- automatic bar code data compression, when required
- automatic bar code checksum calculation and character placement, when required
- automatic placement of special characters (prefix, start/stop, guard bars, and so on), when required
- in PCL 5 emulation is the functional equivalent of Hewlett Packard's Bar Codes & More™ font set and is a fully compatible alternative to an HP LaserJet with JetCAPS BarSIMM/DIMM (v1.8e), except for the FREESCAPE alternate escape code feature.
- converting nearly every text in your print job to a barcode

With the FORMS4WORK Barcode Filter, you have two possibilities for generating a barcode definition, which will be printed as a valid barcode:

Barcode SIMM Emulation
Barcode and Field Scanner

6.4.2.2 Barcode SIMM Emulation

Generating a barcode by inserting a font-like PCL-sequence in your document

Font selection commands in the incoming PCL5 data stream are analyzed for typeface characteristic values given in the 'Esc(s#T' command table. If the typeface value is one of those given, special bar code generation processes the font selection command. If the typeface value is not one of those given, PCL emulation proceeds as normal. The following commands enable you to further define characteristics of the bar code.

Command structure considerations

The incoming data is analyzed for valid parameters such as string length and string characters. These command structure considerations should be followed when implementing bar code applications using the FORMS4WORK Barcode Filter:

The typeface parameter must always be specified, since it directs processing to the bar code generation. Characteristic values, other than the default value, must be explicitly specified. If no value is specified, the default value is used. Previously specified non-default values are not retained.
To print additional bar code data with the same characteristics as the previous data, set a new cursor position and send just the bar code data. It is not necessary to re-send the escape sequence portion of the command.
When other characteristics are specified, it must be in combination (chained) with the typeface characteristic. The order in which the characteristics are combined does not matter. Characteristics not combined (chained) with a bar code typeface value are processed as standard PCL emulation font {text} selection sequences.
Bar codes may be selected using either the primary font selection command, 'Esc(s#T', or the secondary font selection command, 'Esc)s#T'.

Available typefaces

Typeface:	Barcode Symbology:
24600	UPC_A

24610	UPC_E
24620	EAN_8
24630	EAN_13
24640	INTERLEAVED_2_5
24641	INTERLEAVED_2_5_CD
24650	INDUSTRIELL_2_5
24651	INDUSTRIELL_2_5_CD,
24661	MATRIX_2_5_CD
24670	CODE_39
24671	CODE_39_CD
24690	CODE_93
24691	CODE_93E
24700	CODE_128_AUTO
24702	CODE_128_B
24704	CODE_128_C
24750	CODABAR
24751	CODABAR_MOD16_CD
24760	MSI
24761	MSI_MOD10_CD
24762	MSI_MOD10_MOD10_CD
24763	MSI_MOD11_MOD10_CD
24770	POSTNET_5
24771	POSTNET_9
24772	POSTNET_11
24850	PDF417_2D
24820	DATAMATRIX_2D

Cursor positioning

Cursor positioning is set as follows when printing with the FORMS4WORK Barcode Filter:

Command	Characteristic
Esc(s#P	Determines location of human-readable text printed with the bar code.
Esc(s#H	Selects the font used for human-readable text.
Esc(s#V	Selects bar heights.
Esc(s#B	Selects bar widths.
Esc(s#S	Selects space widths.

- From the current cursor position, bar code printing begins at the bottom left corner of the left bar.
- The cursor is located at the bottom right corner of the right bar when printing is complete.
- This cursor positioning applies both with and without accompanying human-readable text.

Human-readable text

Human-readable text can be specified with the bar codes.

- Six different typefaces are available for the text. See the 'Esc(s#H' command in 'PCL Emulation Escape Sequences'.
- The specified text is automatically centered on the bar code.
- Text is automatically scaled based on the width and height of the bar code and on the method of embedding used.

Transparent Print Data command

The Transparent Print Data command 'Esc&p#X[data]' provides printing access to characters with code values < 32 decimal. These characters are normally considered unprintable. Use the Transparent Print Data command to print bar codes which contain characters < 32 decimal.

Examples:

Esc(s4p2h36v24701T	no data specified with bar code selection command.
Esc&p8X20•08•98	desired data, "20•08•98" (8 bytes), specified with Transparent Print Data

command immediately following the bar code selection command, where '•' is the character associated with decimal code 7 in the PC-8 symbol set.

Compressed data formats

Some bar code symbologies, such as UPC-E and Code 128, use compressed data formats. The FORMS4WORK Barcode Filter accepts data for these symbologies in either compressed or uncompressed format. The incoming data is analyzed to determine if it is compressed or not, and if required, compression is automatically performed prior to printing the bar code.

Checksum calculation

Some bar code symbologies define checksum characters as a requirement of the data format. When this is the case, the FORMS4WORK Barcode Filter performs the checksum calculation and automatically places the character(s) per the symbology specifications. Fixed length data formats can be sent with or without checksum characters.

Returning to normal text printing

To ensure a proper return from bar code printing to normal text printing, PCL escape sequences that generate bar codes must be immediately followed by an escape sequence that fully specifies a normal text font.

Example:

Esc(s1p10v0s0b61444T	returns the text following a bar code to 10-point Helvetica with proportional spacing, normal style and medium stroke weight.

PCL Emulation Escape Sequences

Command Function/Parameters

Command Esc(s#P or Esc)s#P

Determines the location of human-readable text printed with the bar code.

0	Use default value
1	Do not print text
2	Print text embedded
3	Print text half embedded
4	Print text under bar code
5	Print text above bar code

Add the numbers listed below to produce the corresponding effect:

10	prints UPC-A checksum at middle left of the bar code instead of the bottom left
10	prints start/stop * characters with Code 3 of 9 text
20	formats German and French postal bar codes
100	prints the checksum character with text

For the UPC-E symbologies, checksum characters are always printed if human-readable text is specified. The checksum characters are printed half-height if 100 is added to the p parameter, and are printed the same height as the text if 100 is not added to the p parameter.

2-D BARCODES:
PDF 417:

0 to 8	defines the ECC (error correction) level
1000	automatic sizes based calculation of the ECC level

Command Esc(s#1,#2,#3,#4B

Selects bar widths in dots (1/720 inch).
Some bar codes, such as Interleaved 2 of 5 and Code 3 of 9, require only two values for this command. Others, such as UPC, EAN and Code 128, require all four values.

#1, first (narrowest) width
#2, second width
#3, third width
#4, fourth width

2-D BARCODES:
PDF-417: Symbol format parameters

#1, Maximum number of rows for the PDF symbol
#2, Maximum number of columns for the PDF symbol
#3, =1 #1 and #2 are the mandatory size for the PDF symbol
=0 or not specified: #1 and #2 are maximum size (default)
#4, =1 The PDF-417 symbol is truncated on its right side
=0 The PDF-417 symbol is not truncated (default)

Example: 8 columns, 10 lines mandatory size, non truncated: 8,10,0b

Data Matrix: Symbol format parameters

#1, Small module height in dots (1/720 inch)

Command Esc(s#1,#2,#3,#4S

Selects space widths in dots (1/720 inch).
Some bar codes, such as Interleaved 2 of 5 and Code 3 of 9, require only two values for this command. Others, such as UPC, EAN and Code 128, require all four values.

#1, first (narrowest) width
#2, second width
#3, third width
#4, fourth width

2-D BARCODES:
PDF-417: Symbol format parameters

#1, Symbol black/white module height compared to the width (1 to 10).
Unit=minimum module width (default=3)
#2, X parameter for the symbol X/Y size ratio (default: 2 for 2/3)
#3, Y parameter for the symbol X/Y size ratio (default: 3 for 2/3)
#4, Symbol module width (1 to 100). Unit=1/100 inch (default value=10).

Example: square PDF, minimum module width, half module size : 1,1,1,5s

Example:

Esc(s13p24670T selects Code 3 of 9 with human-readable text half embedded and start/stop * characters. Because the v, b, s and h parameters are not specified, their values default to:

- **v** .4 inch
- **b1, s1** .01 inch
- **b2, s2** .03 inch
- **h** automatically sized Courier bold

Command Esc(s#H or Esc)s#H

Selects the font used for human-readable text. The numeric value of # is of the form **CBA**, where:

A = typeface

0 Courier (default for all bar code symbologies)

1 Letter Gothic
2 Univers
3 Univers Condensed
4 CG-Times
5 OCR-B

B = size

0 Automatic font size (default)

C = style

0 Default (bold)
1 Regular
2 Italic
3 Bold
4 Bold Italic

Example:

Esc(s305h24620T selects EAN/JAN-8 with automatically sized, OCR-B Bold text. Because the v, p, b and s parameters are not specified, their values default to:

- **v** .7 inch
- **p** print text half embedded
- **b1, s1** .013 inch
- **b2, s2** .027 inch
- **b3, s3** .04 inch
- **b4, s4** .053 inch

Additional configuration options:

Normally for this type of barcode generation no additional configuration options have to be set. All necessary parameters are coming with the print job data. If there are some configuration options, which cant be encoded in the font-like PCL- sequence, please open the properties dialog of the FORMS4WORK Barcode Filter. In the *Barcode Definition Editor* dialog you have to insert a new definition with default values. Then you have to select "defined in print job" as *Barcode Type.* In the properties dialog of this definition you can choose the desired additional options.

You can only create one single definition of this kind in the *Barcode Definition Editor*.

6.4.2.3 Barcode and Field Scanner

Generating a barcode by retrieving data from print job

Even easier as described in barcode SIMM emulation, it is possible to print nearly every text and number in your document as a barcode without the necessity to implement special PCL sequences to define the code properties.
All things you need is the FORMS4WORK Field Scanner Filter to extract the desired text and the FORMS4WORK Barcode Filter to define the barcode properties. Both filters are configurable via a comfortable graphical user interface.

With the help of the example showed below it should be easy to set up the FORMS4WORK Barcode Filter filter for your own print jobs.

Setting up the FORMS4WORK Field Scanner Filter:

- First you have to add the Field Scanner and Barcode Filter to your emulation. The barcodefilter has to be chained after the fieldscanner filter. Alternatively you can insert the Fieldscanner Filter as an Input Filter and the Barcode Filter as an Output Filter.
- Then you have to setup the Field Scanner Filter. In our example we use a a *triggered PCL job* as input stream type. The recognized text data, which should be printed as a barcode is *reported to later*

components (Barcode Filter).

- In the *PCL Scanner Configuration* you have to define a name for the barcode definition (*Field Name*). This name has to be redifined later in the *Barcode Definition Editor*, so that the Field Scanner data can be properly assigned to the correct barcode definition.
- Additionally in the *PCL Scanner Configuration* you have to define a *Trigger Sequence*, in our example the text "Kd-Nr.". This text is searched in the input data stream. When this trigger sequence is detected the next text data (after *offset* characters) with the length of *Length* characters is reported to the Barcode Filter. This text, in our example the number "106047" will be printed as a barcode.
- The record entity, defined in the *PCL Scanner Configuration* has to be 1 Page. That means, the barcode is printed on every page where the according trigger sequence is detected.
- For a detailed description how to set up the FORMS4WORK Field Scanner Filter please see the according section int the FORMS4WORK help file.

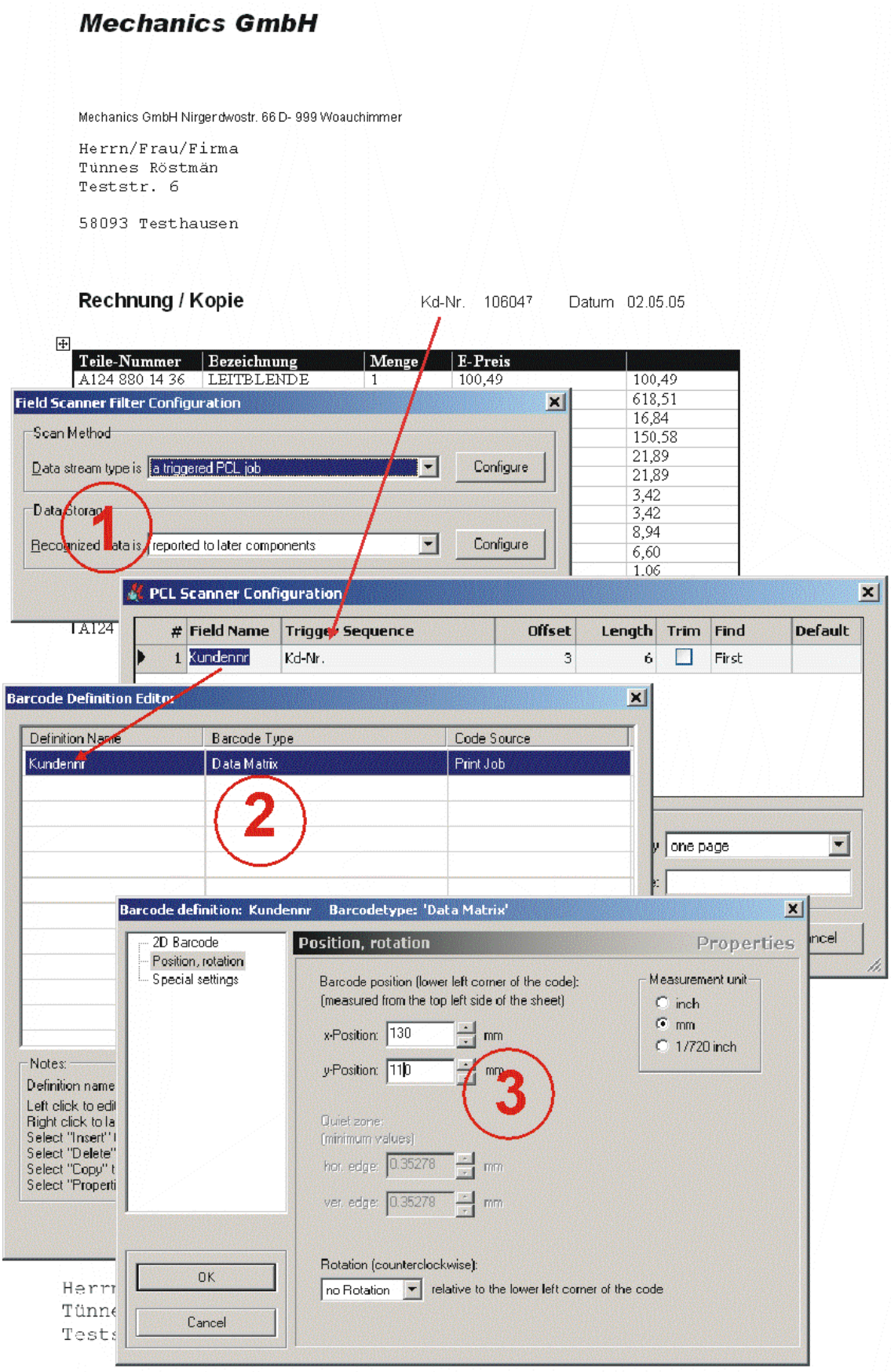
FORMS4WORK Barcode Filter configuration:

- After configuring the FORMS4WORK Field Scanner Filter you have to redefine the Field name in the Barcode *Definition Editor* as *Definition Name*. In this main dialog of the Barcode Filter configuration you have to select the *Barcode Type* and the *Code Source* via Drop down lists. In our example we choose to print the text as a 2D Datamatrix barcode. The code (in our case the number 106047) is captured directly from the source document, so we choose *Print Job* as *Code Source*. Alternatively you can define a static code inside the properties dialog of the barcode definition (*Code Source = Barcode Definition Editor*).
- After defining *Definition Name*, *Barcode Type* and *Code Source* you should enter the definition properties Dialog via context menue or with button named *Definition properties.*
- Here you define the properties of barcode type specific parameters like **HRT (Human Readable Text)**, **bar and space width** and **bar height**. The options are the same as described above in Chapter 1) *Generating a barcode by inserting a font-like PCL-sequence in your document* . If you are not familiar with barcode specific things you can use the supplied default parameters, which are automaticly generated for every barcode type. If the barcode requires a checksum it is calculated automatically.
- For the 2D Datamatrix code showed in the example below, the only barcode type specific parameter is the the *small module height* which defines the width and height of the smallest square entity of this code. With 2D-barcodes no HRT is printed.
-
- In addition to the barcode type specific parameters there are some settings which have to be defined for all barcode types. In the *Position, rotation* dialog at least the **x-Position** and **y-Position** values have to be specified. With this parameters the printing location of the barcode on the page is fixed. The values are measured from the left top side of the sheet and define the location of lower left edge of the barcode (without HRT). For your convenience you can choose the desired measurement unit (inch, mm or decipoints). Please consider the page margins and the nonprintable area of the sheet. A barcode or HRT which sticks outside this bordes is not printed correctly. Due to the barcode is printed as an overlay over the existing page content, you have to choose a position with enough "free" space which satisfies not only the size of the barcode, but also the necessary quiet zone around the code.
- In addition to the position, you can specify the orientation (**rotation**) and **color** of the barcode. The orientation can be chosen in 90° steps. The rotation is performed counterclockwise relative to the lower left corner of the barcode. If you want to print the barcode in another color than black, your printer has to support the PCL Imaging mode. Choose the desired barcode color in the *special settings* dialog.

If you need to generate more different barcodes in one ore more print jobs, you simply have to add unique trigger sequences and field definitions in the FORMS4WORK Field Scanner Filter and according barcode definitions in the FORMS4WORK Barcode Filter.

Example:

Printing a customer number as a 2D barcode of the type Datamatrix :


Mechanics GmbH
Mechanics GmbH Nirgerdwostr. 66 D- 999 Woauchimmer
Herrn/Frau/Firma
Tünnes Röstmän
Teststr. 6
58093 Testhausen
Rechnung / Kopie
Kd-Nr. 106047 Datum 02.05.05
Teile-Nummer Bezeichnung Menge E-Preis
A124 880 14 36 LEITBLENDE 1 100,49 100,49
618,51
16,84
150,58
21,89
21,89
3,42
3,42
8,94
6,60
1.06
Field Scanner Filter Configuration
Scan Method
Data stream type is a triggered PCL job
Configure
Data Storage
Recognized data is reported to later components
Configure
1
PCL Scanner Configuration
Field Name Trigger Sequence Offset Length Trim Find Default
1 Kundennr Kd-Nr. 3 6 First
Barcode Definition Editor
Definition Name Barcode Type Code Source
Kundennr Data Matrix Print Job
2
one page
Barcode definition: Kundennr Barcodetype: 'Data Matrix'
2D Barcode
Position, rotation
Special settings
Position, rotation
Properties
Barcode position (lower left corner of the code):
(measured from the top left side of the sheet)
x-Position: 130 mm
y-Position: 110 mm
3
Measurement unit
inch
mm
1/720 inch
Quiet zone:
(minimum values)
hor. edge: 0.35278 mm
ver. edge: 0.35278 mm
Rotation (counterclockwise):
no Rotation
relative to the lower left corner of the code
OK
Cancel
Notes:
Definition name
Left click to edit
Right click to la
Select "Insert"
Select "Delete"
Select "Copy"
Select "Properti
Herr
Tünne
Tests
58093 Testhausen
PCL Output:
Kd-Nr. 106047 Datum 02.05.05
Rechnung / Kopie
Teile-Nummer Bezeichnung Menge E-Preis
A124 880 14 36 LEITBLENDE 1 100,49 100,49
A124 880 40 70 STOSSFAENGER H 1 618,51 618,51
A124 880 00 97 REP.SATZ 1 16,84 16,84
A124 885 14 21 SCHIENE 1 150,58 150,58

6.4.3 Codepage Filter

6.4.3.1 Application

Each operating system uses a certain standard character set to save text. The most common character sets are ASCII (**A**merican **S**tandard **C**ode for **I**nformation **I**nterchange), which is a 7-bit system, and EBCDIC (**E**xtended **B**inary **C**oded **D**ecimal **I**nterchange **C**ode), which is an 8-bit system. Many operating systems use the 8th bit with ASCII code for language-specific characters (for example umlauts and special characters).

The Windows operating system under which FORMS4WORK works, uses the ASCII character set, extended by language-specific characters in the form of an 8-bit code table.

Normally the emulation of print data in FORMS4WORK is transparent in the system, in other words FORMS4WORK does not mind which code is used. In cases where the data received by FORMS4WORK are supplied by an EBCDIC host, however, and the output device to which FORMS4WORK supplies the data only understands ASCII code, or a FORMS4WORK emulation requires ASCII code, the data must be converted. This also applies the opposite way round and for different language-specific special characters.

Use the Codepage filter from FORMS4WORK to convert the character tables for the received data before the emulation and / or the outgoing data after the emulation.

To use the Codepage filter, you must have installed the Windows NT Language Pack, which is supplied on the installation CD for Windows NT.

6.4.3.2 NT Language Pack

On the installation CD for Windows NT, you will find the directory

\LANGPACK

which contains all the files required to install the Windows NT language pack.
Log on with an account which has administrator rights and start the Windows NT Explorer to install these files. Click on the INF file that you wish to install with the right mouse button. Then click on 'Install' in the context menu.

To install all the variants, use the 'EXCHSRVR.INF' file and proceed as described above.

Another section is in the standard installation directory for Windows NT, for example \I386. Insert the die Windows NT CD as soon as you are asked to do so.

After the installation, the following character sets and codepages will be available:

EBCDIC character set:

Codepage and character set

- 037 IBM EBCDIC U.S./Canada
- 500 IBM EBCDIC International
- 870 IBM EBCDIC Latin-2 Multilingual/ROECE
- 875 IBM EBCDIC Greece
- 1026 IBM EBCDIC Latin-5 Turkey
- 20273 IBM EBCDIC Germany
- 20277 IBM EBCDIC Denmark/Norway
- 20278 IBM EBCDIC Finland/Sweden
- 20280 IBM EBCDIC Italy
- 20284 IBM EBCDIC Latin America/Spain
- 20285 IBM EBCDIC United Kingdom
- 20290 IBM EBCDIC Japanese Katakana Extended
- 20297 IBM EBCDIC France
- 20420 IBM EBCDIC Arabic

- 20423 IBM EBCDIC Greek
- 20833 IBM EBCDIC Korean Extended
- 20838 IBM EBCDIC Thai
- 20871 IBM EBCDIC Icelandic
- 20880 IBM EBCDIC Cyrillic
- 20905 IBM EBCDIC Turkish
- 21025 IBM EBCDIC Cyrillic (Serbian, Bulgarian)

Language-specific character sets

- Arabic Codepage and NLS API support
- Language support for Cyrillic
- For european languages with latin fonts
- Language support for Greek
- Hebrew Codepage and NLS API support
- Japanese Codepage, NLS API and font support
- Korean Codepage, NLS API and font support
- Chinese (Taiwan) Codepage, NLS API and font support
- Codepage and NLS API support for Thai
- Language support for Turkish
- Language support for English (US)
- Vietnamese Codepage and NLS API support

To select the Codepage conversion or to define different character conversions, configure the Codepage filter using the configuration dialog.

6.4.3.3 Configuration

The conversion of the codepage requires the definition of the codepage used for the incoming data and the definition of the required codepage for the outgoing data.

Input Codepage

Use this to set the codepage for the incoming data (source data). The selection available depends on the codepages installed on the system. See the notes on the NT Language Pack.

Output Codepage

Use this to set the required codepage for the destination data. Here, too, the available selection depends on the codepages installed on the system. See the notes on the NT Language Pack.

Regardless of the codepages setting, the conversion of individual characters that differ from the standard can be defined manually using the so-called Patch Table.

6.4.3.4 Patch Table

In the case that you require the conversion of an individual character which differs from the installed codepages, define the new code of the character here.

The table shows the current codes for all 255 characters. To change a special character, select the current code and enter a new value in the field Hex Value. After confirmation with the button Apply, the new code will be set.

After Replacing all necessary characters close this dialog by pressing OK.

Example:

You want to change ASCII code line feed (LF, decimal 10, hexadecimal 0x0A) to Carriage Return (CR, decimal 13, hexadecimal 0x0D).

Select in line 0x (from 0x0A) column xA (from 0x0A). In the field Hex Value, the current code 0A will be

displayed. Change this code to 0D and confirm pressing Apply.

6.4.4 Conditional Stringchange Filter

6.4.4.1 Application

The Conditional Stringchange filter is, like the normal Stringchange filter, used to replace or remove individual characters and character strings in the data stream before and / or after the emulation of the print data. When a certain defined condition is matched, the Stringchange filter is triggered.

see Stringchange filter

Example:

- The input data stream contains special characters, such as umlauts (e.g. 'ä'). If a certain character string is found in the data stream, for instance 'English', a Stringchange is triggered to replace the umlauts with other character strings (e.g. 'ae').

6.4.4.2 Configuration

The Conditional Stringchange filter requires four pieces of information to replace or remove a character or a character string:

- Character or character string (Trigger) that causes one or more Stringchanges.
- Character or a character string to be replaced ('Search for')
- Character or a character string, which is to replace the source ('Replace with') or empty, if the source is to be removed.
- Consideration to low or high case letters.

If Data contains

Shows a list of all the defined strings that will trigger a Stringchange.

Add

Add and define one or more new triggers.

see Definition of a trigger

Edit

Edit the highlighted trigger(s).

see Definition of a trigger

Remove

Remove the highlighted trigger(s).

see Definition of a trigger

Ignore Case

Enable to ignore case of string.

This allows to define whether the replacement is to be completed taking case into account, in other words whether 'abc' and 'Abc' or just 'abc' is to be replaced. The setting applies for all replacements.

Default: disabled

Search for

Shows a list of all the defined source character strings for replacements, in other words which characters or character strings must be replaced.

Replace with

Shows a list of all the defined destination character strings for replacements, in other words the characters or character strings that are to replace the source character strings. If the display is empty, no replacement will be made and the source character string will simply be removed.

Add

Add and define a new replacement.

see Definition of a replacement.

Edit

Edit an already defined replacement.

Remove

Delete a previously defined replacement.

The number of triggers / replacements and the length of each trigger / replacement are limited as follows:

- A trigger / replacement character string is limited to 512 characters.
- The possible number of triggers / replacements is calculated using the following formula:

  Total of lengths of all sources + number of sources + 1 <= 32767

6.4.4.3 Definition of a trigger

Define a trigger.

Enter the following information:

If Data contains

Define character string(s) that will trigger a Stringchange.

Characters that cannot be entered using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code. The '%' character itself is displayed as '%%'.

Examples:

- 'Hello' replaces the word 'Hello'
- 'Ä' replaces the German umlaut 'Ä'
- '%0D%0A' replaces the ASCII control characters Carriage Return (CR) and Line Feed (LF).

Add / Edit / Remove

Search for:

Define / Edit / Remove one or more trigger(s).

Unprintable characters or data bytes may be entered as hexadecimal value with preceding '%', i.e. %0D is interpreted as ASCII - CR

6.4.4.4 Definition of a replacement

Define a replacement.

Enter the following information:

Search for

Define character string which is to be replaced when trigger is found (see configuration).

If case is ignored depends on the setting of 'Ignore Case'.

Characters that cannot be entered using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code. The '%' character itself is displayed as '%%'.

Examples:

- 'Hello' replaces the word 'Hello'
- 'Ä' replaces the German umlaut 'Ä'
- '%0D%0A' replaces the ASCII control characters Carriage Return (CR) and Line Feed (LF).

Replace with

Define character or character string to replace the string defined in 'Search for'.

Leave empty to delete the searched for character string from the data stream. Replacements that cannot be entered using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code.

Examples:

- Search for 'Hello World' Replace with 'Hey You' replaces 'Hello World' with 'Hey You'
- Search for 'Ä' Replace with 'Ae' replaces the umlaut 'Ä' with 'Ae'
- Search for '%0D%0A' Replace with '%0A' replaces CR/LF with LF
- Search for '%1BD' Replace with '' removes ESC-D

6.4.5 Field Scanner Filter

6.4.5.1 Application

The Field Scanner filter is used to scan print job data for data fields. This filter does not modify the original print job data. The filter scans the print job data using one of several scanning methods to detect data fields. Detected data values are passed to one of several storage methods or may be used to modify job parameters.

Processing and usage of data field values depends on appropriate components, which do support usage of the Field Scanner filter.

6.4.5.2 Configuration

Before you can configure any other parameters, be sure to setup data scanning.

Data Scanning

The Field Scanner filter is configured by defining an appropriate scanning method and an appropriate storage method. The scanning method defines how data fields can be detected within the print job data and is therefore dependent of the print job data format (e.g. ASCII, PCL and others).

- Triggered Binary Job
- Triggered PCL Job
- PCL Job Scanned For Text Areas
- CSV Formatted ASCII Data
- ASCII Formatted With Fix Column Width

Data Processing

The storage method of detected data fields depends on what is to be done with that data. When passing to other components, this also requires components, which do support the selected storage method.

- Reporting to later components
- Saving To ODBC Database
- Writing DOCUMENTS4WORK export files

Job Data Manipulation

Each job passing FORMS4WORK will have some dynamically created administrative information. One of the most common is the jobs' name itself. Some of these parameters may be overwritten with data retrieved by the data scanner. These are:

<jobname>	The name of the job displayed during processing and passed over to further processing and output devices.
<username>	The name of the user who created the print job.
<destaddress>	The destination address where the job is send to, if defined with the logical printer. This may be e.g. the e-mail address of the receiver when using an SMTP output port.
<destport>	The destination port or printer as delivered from input port or protocol. This is e.g. the name of the queue where the job has to be processed, when using an LPD input port.

Availability of these job information fields depends on the input port and protocol used. Not all protocols and ports do support all of this information.

Depending on the output port and protocol used, these parameters may be passed over to the next step in processing or to the output device. This mechanism e.g. enables display of a job name on the output device, which was previously detected by the scanner within the job data stream.

When using job data manipulation, spooling has to be turned on at output port. Also the option 'Start printing even if job is not completely spooled' must not be enabled. Be careful which data is to be modified, especially don't modify the job's destination address if you don't get the result straight.

If you want to use job data manipulation only, without storing the retrieved data, select Reporting to later components as storage method at data processing setup.

The replacement for the field in the left column is entered as a string in the right column. This string can be simply a field name retrieved by the scanner with a preceeding '$' character in which case this will be a one by one substitution. E.g. to substitute the jobs' name with the field '`CustomerId`' type '`$CustomerId`'.

To use more than one field for generating substitution strings follow the rules for the interpreter. To leave a parameter as is, set the right column to empty.

Interpreter Rules

The built-in interpreter allows calculations with nested braces and expressions according to the common order of operators. The maximum nesting depth for braces is about 2000.

Data fields must be preceded by a `$` character. Entering e.g. `$Name` results in the output of e.g. Smith. Data fields and strings can be concatenated by addition. As a result of `$Name + ", " + $Prename` the output will be e.g. `Smith, Will`.

Strings are delimited by " characters. Entering `"Name"` results in the output of `Name`. Strings can be concatenated by addition. As a result of `"Name" + ", " + "Prename"` the output will be e.g. `Name, Prename`.

To use double quotes as a character within a string constant, type `'\"'`.

The following types of numbers are supported:

12.234	Floats and also integers
1.2e4 = 1.2*1O^4	Exponential numbers
Ox1B0A = 69?2	Hexadecimal numbers (Ox...)
0177 = l27	Octal numbers (0....)

Predefined Constants:

E	Exp(1)
G	Gravity constant
PI	3,1415...

The following operators are supported:

+ - * /	Simple calculations
%	Modulo, remainder
^	Power of
|	OR (bitwise for numbers, logical for conditions)
&	AND (bitwise for numbers, logical for conditions)
~	Bitwise exclusive or

Examples:

4 | 7 = 7	7=O111b has Bit 2 (2^(2)=4) already set.
4 | 7.6 = 4 | 7	Equal by rounding
123 & 1 = 1	Odd number (Bit 0 is 1)
124 & 1 = 0	Even number (Bit 0 is 0)
124 ~ 1 = 125	Bit 0 (0) will be 1
125 ~ 1 = 124	Bit 0 (1) will be 0

The priority order of operators is defined as common. Here is the order from highest to lowest priority:

-	Signed numbers
^	Power of, right to left
* / %	Left to right
+ -	Left to right
&	Binary / logical AND, left to right
|	Binary / logical OR, left to right
~ |	Binary exclusive OR, left to right

It is important that with logical operators each partial condition must be put in brackets. As an example a correct expression would be:

```
IF ( ($Gender="F") & ($Job="Waiter"); "Waitress"; $Profession )
```

Missing brackets as in

IF ($Gender="F" & $Job="Waiter"; "Waitress"; $Profession)

will give a wrong result!

Calculation within expressions are done due to commonly known rules:

```
a+b+c       = (a+b)+c Associative property for + - * /
a/b/c = (a/b)/c As above
a+b*c       = a+(b*c) Multiplication before addition
a*b^c       = a*(b^c) Power of has higher priority as '*'
a^b^c       = a^(b^c) Associative property for power of
sin x*pi    = (sin(x)) * pi
a^sqrt e    = a ^ (sqrt(e))
```

Structural functions:

IF(condition;then;else)	Returns result depending on 'condition'. 'Condition' is an expression using '<', '>', '=' and '<>' for not equal, which may be true or false. The expression given by 'then' will be returned if 'condition' is true, else the expression given by 'else' will be returned.

String functions:

VAL(string)	Convert string to numerical value
TEXT(value)	Convert numerical value to string
LENGTH(string)	Returns number of characters in string
LEFT(string [; #chars])	Returns #chars left characters of string. If #chars is missing, 1 is assumed
MID(string; pos; #chars)	Returns #chars of string beginning at position pos
RIGHT(string [; #chars])	Returns #chars right characters of string. If #chars is missing, 1 is assumed
LOWER(string [;#chars])	Changes first #chars of string to lower case. If #chars is missing the whole string is changed
UPPER(string [;#chars])	Changes first #chars of string to upper case. If #chars is missing the whole string is changed

Numeric functions:

The following mathematical standard functions are implemented and supported:

transcendental Fct.:	sin, cos, tan, cot, asin, acos, atan, acot
Hyperbolical Fct.:	sinh, cosh, tanh, coth, asinh, acosh, atanh, acoth
Logarithmic Fct.:	ln, lg, exp
Squareroot Fct.:	sqrt
Square Fct.:	sqr
Rounding Fct.:	round, floor, ceil, frac
Factorial:	fac
Modulus:	abs

Further implemented functions are:

LN a	Natural logarithm of a (base is e)
LG a	Logarithm of a (basis is 10)

There is no problem to calculate with + or - infinite. The expression '1/0' will result in 'INF' (infinite), also '-1/0 = -INF'. This allows e.g. calculation of arcus tangens of infinite:

```
tan (pi/2) = inf; not exactly, due to inaccuracies...
atan (inf) = pi/2
```

6.4.5.2.1 Triggered Raw Byte Stream

This scan method will search within any byte stream. To recognize data fields, trigger sequences, which will always precede the data values, need to be defined.

All field definitions are entered into the table. To add or remove lines, right click into the table and use the popup menu.

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks.

Type

Defines the type of data used for this field. Data is used for job data recognized using a trigger sequence. Variable is used to set a field's value using a job information field. Constant is used to set a field's value always to the same constant value.

Trigger Sequence

This defines a sequence of bytes, which is always preceding the field value. This string is case sensitive. Characters, which may not be typed in using the keyboard, can be entered with a percent sign '%', followed by a two digit hex code, e.g. '%0d' for carriage return. To use the percent sign, type '%%'.

Offset

Defines the number of bytes following the trigger sequence, before the field value starts.

Length

Defines the number of bytes after the trigger sequence and offset to be used as field value. If length is set to 0, the trigger sequence itself will become field value, if present. If not, the field value will be empty.

Example: A field named 'Doctype' with a trigger sequence as 'DOC', an offset of 8 and a length of 4. The print job data contains a text as 'any text in DOC0123456789abc followed with text'. This will be recognized as data field 'Doctype' with value '89ab'.

Regular Expression

Defines the syntax for a regular expression to extract field values from retrived data using a search pattern.

Default Value

Defines the default value to be used if the trigger sequence can not be found.

Find

This option defines, which appearance of the data is to be used as field value. If a unique trigger sequence can be defined, a data field is found only once. If this is not possible, here you may decide if the first, the last or all appearances will become data field value. In case of all, all detected values are concatenated to a long character string, each value separated from each other by a space character.

Trim Internal Blanks

This switch controls internal trimming of the field value. Regardless of the optional trimming of leading and/or trailing whitespace characters, this option will remove space and tab characters within the field value. As an example, a field value of ' V A L U E ' with this option enabled will result in a value of 'VALUE '. To remove the leading or trailing blanks, the options trim leading and/or trim trailing whitespace

characters need to be used.

Variable

This list contains job information data as job id, job name, user name etc. All this information - whenever it becomes available - is dynamically set for each job. By selecting field type Variable and one of these job information fields, you may use job information as a field value.

Constant

This field is used to define a constant value. It might be necessary to set a field value always to a constant value. To do this, select Constant as field type and enter the value to be used here.

Premature whitespace terminates value

When e.g. the value is defined with a length of 8 bytes, there may be spaces within this length. With this option set, the space character will terminate the value even before the length of 8 is reached. The result will be '1234' instead of '1234 678' when a space is found between the digits 4 and 6. This is also done for other whitespace characters as Tab, Carriage Return, Line Feed and Form Feed.

Trim leading whitespace chars

If this option is set, whitespace characters are removed from the left end of the data field value string.

Trim trailing whitespace chars

If this option is set, whitespace characters are removed from the right end of the data field value string.

Record entity is defined by...

Whole print job, this treats the complete print job as one data record.

Field repetition, this treats data as a new data record, whenever one of the fields is recognized again.

Trigger sequence, this requires a string entered in the field below. This string will be used as a criterion for the end of a data record. You may e.g. use the trigger sequence 'Page 1', to start a new record whenever a new document starts within the print job.

Handling of data records also depends of the used storage method. If the storage method does not support variable number of records, only one record per job will be available. Newly recognized field values automatically overwrite past values.

6.4.5.2.2 Triggered PCL Job

This scan method will search within the ASCII readable part of each page of the print job. To recognize data fields, trigger sequences, which will always precede the data values, need to be defined.

All field definitions are entered into the table. To add or remove lines, right click into the table and use the popup menu.

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks.

Type

Defines the type of data used for this field. Data is used for job data recognized using a trigger sequence. Variable is used to set a field's value using a job information field. Constant is used to set a field's value

always to the same constant value.

Trigger Sequence

This defines a sequence of bytes, which is always preceding the field value. This string is case sensitive. Characters, which may not be typed in using the keyboard, can be entered with a percent sign '%', followed by a two digit hex code, e.g. '%0d' for carriage return. To use the percent sign, type '%%'.

Offset

Defines the number of bytes following the trigger sequence, before the field value starts.

Length

Defines the number of bytes after the trigger sequence and offset to be used as field value. If length is set to 0, the trigger sequence itself will become field value, if present. If not, the field value will be empty.

Example: A field named 'Doctype' with a trigger sequence as 'DOC', an offset of 8 and a length of 4. The print job data contains a text as 'any text in DOC0123456789abc followed with text'. This will be recognized as data field 'Doctype' with value '89ab'.

Regular Expression

Defines the syntax for a regular expression to extract field values from retrived data using a search pattern.

Default Value

Defines the default value to be used if the trigger sequence can not be found.

Find

This option defines, which appearance of the data is to be used as field value. If a unique trigger sequence can be defined, a data field is found only once. If this is not possible, here you may decide if the first, the last or all appearances will become data field value. In case of all, all detected values are concatenated to a long character string, each value separated from each other by a space character.

Trim Internal Blanks

This switch controls internal trimming of the field value. Regardless of the optional trimming of leading and/or trailing whitespace characters, this option will remove space and tab characters within the field value. As an example, a field value of ' V A L U E ' with this option enabled will result in a value of ' VALUE '. To remove the leading or trailing blanks, the options trim leading and/or trim trailing whitespace characters need to be used.

Variable

This list contains job information data as job id, job name, user name etc. All this information - whenever it becomes available - is dynamically set for each job. By selecting field type Variable and one of these job information fields, you may use job information as a field value.

Constant

This field is used to define a constant value. It might be necessary to set a field value always to a constant value. To do this, select Constant as field type and enter the value to be used here.

Premature whitespace terminates value

When e.g. the value is defined with a length of 8 bytes, there may be spaces within this length. With this option set, the space character will terminate the value even before the length of 8 is reached. The result will be '1234' instead of '1234 678' when a space is found between the digits 4 and 6. This is also done for other whitespace characters as Tab, Carriage Return, Line Feed and Form Feed.

Trim leading whitespace chars

If this option is set, whitespace characters are removed from the left end of the data field value string.

Trim trailing whitespace chars

If this option is set, whitespace characters are removed from the right end of the data field value string.

Record entity is defined by...

One page, this treats each page as a new data record.

One sheet, this treats each sheet as a new data record.

Whole print job, this treats the complete print job as one data record.

Field repetition, this treats data as a new data record, whenever one of the fields is recognized again.

Trigger sequence, this requires a string entered in the field below. This string will be used as a criterion for the end of a data record. You may e.g. use the trigger sequence 'Page 1', to start a new record whenever a new document starts within the print job.

Handling of data records also depends of the used storage method. If the storage method does not support variable number of records, only one record per job will be available. Newly recognized field values automatically overwrite past values.

6.4.5.2.3 PCL Job Scanned For Text Areas

This scan method will search within each page of a PCL print job. To recognize data fields, rectangular areas containing the field values, need to be defined.

All field definitions are entered into the table. To add or remove lines, right click into the table and use the popup menu.

Job Template

Select a print job file to use it on the display for defining fields by rectangular areas. You may either enter the complete path of the job file into the edit field or click on the right button to browse for a file. After selection of the file, clicking on the Open button shows a field designer window with controls for drawing rectangles.

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks.

Type

Defines the type of data used for this field. Data is used for job data recognized using a trigger sequence. Variable is used to set a field's value using a job information field. Constant is used to set a field's value always to the same constant value.

Text Position

Defines a rectangular area by position of the left top corner and its width and height. All values are

entered as 1/100 millimeters. When using the field designer for defining field areas, these values are entered automatically.

Scope Of Scan

By default a field area is valid for every page. You may also define field, which appears only on a specific page as e.g. page 2. To select a specific page, enter the page number here.

Default Value

Defines the default value to be used if the defined area contains no text.

Regular Expression

Defines the syntax for a regular expression to extract field values from defined areas using a search pattern.

Trim Internal Blanks

This switch controls internal trimming of the field value. Regardless of the optional trimming of leading and/or trailing whitespace characters, this option will remove space and tab characters within the field value. As an example, a field value of ' V A L U E ' with this option enabled will result in a value of ' VALUE '. To remove the leading or trailing blanks, the options trim leading and/or trim trailing whitespace characters need to be used.

Variable

This list contains job information data as job id, job name, user name etc. All this information - whenever it becomes available - is dynamically set for each job. By selecting field type Variable and one of these job information fields, you may use job information as a field value.

Constant

This field is used to define a constant value. It might be necessary to set a field value always to a constant value. To do this, select Constant as field type and enter the value to be used here.

Premature whitespace terminates value

When e.g. the value is defined with a length of 8 bytes, there may be spaces within this length. With this option set, the space character will terminate the value even before the length of 8 is reached. The result will be '1234' instead of '1234 678' when a space is found between the digits 4 and 6. This is also done for other whitespace characters as Tab, Carriage Return, Line Feed and Form Feed.

Trim leading whitespace chars

If this option is set, whitespace characters are removed from the left end of the data field value string.

Trim trailing whitespace chars

If this option is set, whitespace characters are removed from the right end of the data field value string.

Record entity is defined by...

Whole print job, this treats the complete print job as one data record.

Number of pages, this treats a specified number of pages as one data record.

Handling of data records also depends of the used storage method. If the storage method does not support variable number of records, only one record per job will be available. Newly recognized field values automatically overwrite past values.

6.4.5.2.4 CSV Formatted ASCII Data

This scan method will read ASCII data formatted in a CSV compatible format. CSV format is database oriented and requires one line for each record. A line break means a new record begins. All data fields of one record are separated with a separator character and may be enclosed with a delimiter character.

To recognize data fields, the fields names either need to be defined or must be listed in the first data line.

The table is used to define the list of fields. This list needs to be set up in the same order as the fields appear within the job data. To add or remove lines, right click into the table and use the popup menu.

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks. If a column is not needed, select '--- Skip data ---'.

Read field names from first line

If this option is set, it is assumed that all data field names are listed as first record in the first line of the data to be processed. In this case, you need not to enter any field name in the table. Only a place holder for each field needs to be defined, whether the field is skipped using '--- Skip data ---' or not as with '- From 1st line -'.

Ignore first line

In case that data field names are listed in the first line but you want to use other filed names defined by yourself, use this option. You may define each field name and the first line during processing is simply ignored.

Field separator

This defines the character used as separator for data fields within a record. Most common is the semicolon. Also often used are colon, space and tab. You may also define your own character using other and typing the character in the field on right side.

Delimiter character

If the character used as field separator also may appear within the data fields, these need to be enclosed with a delimiter character. Commonly used are " and '.

Trim leading whitespace chars

If this option is set, whitespace characters are removed from the left end of the data field value string.

Trim trailing whitespace chars

If this option is set, whitespace characters are removed from the right end of the data field value string.

6.4.5.2.5 ASCII Formatted With Fix Column Width

This scan method will read ASCII data with a fix width for each data column. There are no separator or delimiter characters present or required. Each data field is defined by its column width, which must be the same over all records

To recognize data fields, the fields either need to be defined or must be listed in the first data line.

The table is used to define the list of fields. This list needs to be set up in the same order as the fields appear within the job data. To add or remove lines, right click into the table and use the popup menu.

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks. If a column is not needed, select '--- Skip data ---'.

Chars

Defines the number of characters used for this field. This is the exact width in characters to be read as field value or to be skipped.

Read field names from first line

If this option is set, it is assumed that all data field names are listed as first record in the first line of the data to be processed. In this case, you need not to enter any field name in the table. Only a place holder for each field needs to be defined, whether the field is skipped using '--- Skip data ---' or not as with '- From 1st line -'.

Ignore first line

In case that data field names are listed in the first line but you want to use other filed names defined by yourself, use this option. You may define each field name and the first line during processing is simply ignored.

Trim leading whitespace chars

If this option is set, whitespace characters are removed from the left end of the data field value string.

Trim trailing whitespace chars

If this option is set, whitespace characters are removed from the right end of the data field value string.

6.4.5.2.6 Reporting To Later Components

This storage method is notifying all components placed and working after the Field Scanner filter whenever a data field or a record change has been recognized. Notification is done at the moment, when the scanner method reports one of these events. All components, which do support Field Scanner notification, will receive the recognized data immediately.

Recognized data fields are not stored within this method. If a data field is recognized more than once, the newer value always overwrites the past.

Record entities are reported as configured within the scanner method. Although this supports multiple records, there will be always one record per job, if the components, which receive and handle notification, do not take care of this.

This storage method does not need any configuration.

Processing and usage of data field values depends on appropriate components, which do support usage of the Field Scanner filter.

6.4.5.2.7 Saving To ODBC Database

This storage method is writing recognized data into an ODBC data source.

Recognized data fields are buffered until a record entity is recognized as complete. If a data field is recognized more than once, before completion of a record entity, the newer value may overwrite the past. As soon as a record entity is complete, all data of this record is saved into the ODBC data source table as configured.

Configuration is done by defining

- Data Source
- Data Table
- Data Fields

Data Source

Name

Select the ODBC data source from the list of known and configured data sources.

User

Enter the user name to be used for connecting the ODBC data source, or leave empty if not needed.

Password

Enter the password to be used for connecting the ODBC data source, or leave empty if not needed.

Connect

Click on this button to establish a connection to the ODBC data source. A connection must be established to complete the configuration of the data table, which is used to receive recognized data.

ODBC Manager

This button opens an applet for setting up ODBC data sources. The applet is the same as known from the system control. An ODBC data source needs to be defined and configured within this dialog, before it can be used for setting up this storage.

Data Table

Table creation

This controls whether a new table is created or an existing table is used to store the recognized data.

Only use existing table, will not create a new tables. An existing table must be selected in the table name field below. If data fields are scanned that are not part of the selected table, this data fields will **not** be stored. To be stored the name defined within the scanner must match a field defined within the data table. If the table does not exist, the storage fails.

Use existing or create new, will try to use an existing table with the name given in the table name field below. If this table has disappeared or does not exist, a new table will be created. Saving data fields into an existing table requires field names within the table matching the names at scanner definition as described above. For creation of a new table, the data type of the fields scanned for need to be defined in the data fields page.

Drop existing and always create new, will drop any existing table with the name given in the table name field below. Then a new table is created according to the definitions done at scanner setup. The data type of the fields scanned for need to be defined in the data fields page.

Table name

If using an existing table, just select the required table name from this list. For creation of new tables, the table name may be either 'JobId_<jobid>' or 'JobName_<jobname>', where the variables '<jobid>' and '<jobname>' will be replaced by their actual value at processing time. Since these values may be completely numeric, which is with some databases not allowed as a table name, the prefixes are added.

Records of new jobs are added...

To existing records, will just insert new records into the table and thus collects records of multiple print jobs cumulatively.

After deleting existing records, will delete any existing record from the table, before adding new records.

Data Fields

Field Name

Defines the name of a data field. This name needs to be unique and should not contain blanks. Usually the names are set at scanner definition or detected automatically.

Field Type

This defines the type of the data stored in the database field. Varchar is the simplest one, where everything may be saved to. A Varchar field may have any length up to 255 characters. Other types as Integer, Double or Date require the field values properly formatted. Longtext is for alphanumeric text with more than 255 characters. The maximaum length of Longtext is database specific. When using any other type than Varchar, make sure the data values have the right format, e.g. a field value of 'catch22' cannot be saved to a Date field.

Length

Defines the length of the database field.

6.4.5.2.8 Writing DOCUMENTS4WORK import files

This storage method is writing recognized data into DOCUMENTS4WORK import files.

Usage of this storage method requires output of print jobs to file. Additionally the default filename needs to be configured to '<Drive>:\<Directory Path>\<jobid>.<Extention>' where <Drive>, <Directory Path> and <Extention> needs to be replaced with appropriate values as for example 'D:\Output\<jobid>.prn'. The filename **must** be set to <jobid>.

Recognized data fields are buffered until a record entity is recognized as complete. If a data field is recognized more than once, before completion of a record entity, the newer value always overwrites the past. As soon as a record entity is complete, all data of this record is written to an DOCUMENTS4WORK import file is will be created in the same directory as the output file. The filename used is the job id and therefor the same as the filename of the print job.

Configuration is done by defining

- General Options
- Data Fields

General

Folder

Enter the name of map title to be used for DOCUMENTS4WORK import.

Charset

Select the charset used in the print job data. You may select either ASCII or ANSI.

Date Format

is used to re-format data fields marked as date. Any date recognized is changed in its format according to the settings made here.

Order

This defines the order of the dates parts. 'Y' stands for year, 'M' for month and 'D' for day. German date format e.g. are 'DMY' as english formats are using the 'MDY' order.

Separator

This defines the separator character used to divide the date parts. You may also leave this field empty if no separator is required. E.g. the order of YMD without separator as e.g. '20050301' is commonly used because this supports numeric sorting of dates.

Two-digit day and month

If checked, the day and the month is always formatted with 2 digits as e.g. '03' instead of '3'.

Four-digit year

If checked, the year is formatted with 4 digits as e.g. '2005' instead of '05'.

Data Fields

All field definitions are set in the table and will reference field definitions defined at the scanner configuration. To add or remove lines, right click into the table and use the popup menu.

Value

Select a data field name configured with the scanner method or <Document file> to refer the print job output.

Field Type

DOCUMENTS4WORK uses text fields and document fields. To control usage of a recognized data field, select the appropriate field type here. Text fields are written to import file using the field identifier "FI", document fields are written to import file using the field identifier "BI".

Field ID

Each data field used for import also needs to be referenced by an unique ID. Select the appropriate value here. Field IDs for text fields are allowed in the range of 1001 up to 1999. Document fields may have IDs in the range of 2001 up to 2999.

Date

If checked, the field is marked as a date which has to be re-formatted, using the settings made in the date format group of the general page.

As an example, a scanner is defined to recognize the fields 'Customer ID' and 'Sales Account'. The DOCUMENTS4WORK map title is set to 'CAPTURE'. Both recognized data fields are passed as text fields using IDs 1001 and 1002. The print job file itself is passed as a document field with ID 2001. Then, the created import file will look as follows:

```
@CHARSET,ANSI
@FOLDER,FT:^CAPTURE^,FI:1001,FI:1002,BI:2001
^50003930^,^821^,^D:\Output\42.pcl^
@FOLDER,FT:^CAPTURE^,FI:1001,FI:1002,BI:2001
^50003955^,^321^,^D:\Output\42.pcl^
```

6.4.6 Job Copier Filter

6.4.6.1 Application

The Job Copier filter is used to create multiple copies of processed print jobs.

Copies can be created parallelly or serially. Parallel means the job is copied parallely to multiple destination directories. You may define a list of directories, which will receive a copy of the print job for further processing. This filter does not modify the print job's data.

Serial copies are created by appending the print job several times to itself. This will produced one job file containing several copies of the job in serial.

6.4.6.2 Configuration

Define a destination directory for each copy to be created.

Destination Directory

To add another copy of the print jobs, click on the Add button and select a directory. The path will be added to the list of job directories. To change the destination directory, click on the Edit button. To remove a copy, select the required job directory and click on the Remove button.

Appendices

If this count is greater than 0, it defines the number of copies of the print job which, will be added to the output file as serial copies. E.g. the value of 2 will produce a print job file, which contains the original print job and 2 copies appended. In summary the original print job will be 3 times there.

Also pass job information data

If sending print jobs to a FORMS4WORK input port, additional information about the print job as source, name etc. can be transferred. This information will be transferred before the print data. To use this feature, the option of the corresponding input port must be checked, too. This option must not be used, if the receiver is not a FORMS4WORK input port.

Add copy no. to file name

If checked, the number of the copy will be appended to the file name. If using the same job directory twice this option is forced, because the copies must have different file names.

6.4.7 Job Separator Filter

6.4.7.1 Application

The Job Separator filter is used to divide PCL print jobs to several partial jobs depending on criteria present within the print job data.

Examples:

- The input data stream contains several constant character sequences, which are used to classify each page. Using the Job Separator filter the original job may be divided into several jobs where each partial job contains only pages of one type.
- The input data stream contains one constant character sequence followed by a specified number of variable characters or digits as e.g. customer IDs. Using the Job Separator filter the original job may be divided into several jobs where each partial job contains only pages for one customer.

6.4.7.2 Job Separation

The Job Separator filter is suing two different methods for dividing jobs. Each method requires a definition of one or more trigger sequences. Select the required method, then define the trigger sequences.

Method

Scan for set of constant triggers

This method is used to divide PCL print jobs by constant character sequences that are used to classify pages. Each trigger sequence is used as a criterion to be searched on each page. If found, the page is assigned to a partial job containing only pages of this type. If more than one trigger sequence is present, the first to be found is significant. If no trigger sequence is present, the page is classified as unassigned.

Scan for one trigger followed by variable data

This method is used to divide PCL print jobs by variable character or digit sequences present on each page. There is only one trigger sequence to be defined, which preceds the variable part. This trigger is part of the final criterion as also the specified number of characters or digits. E.g. a trigger sequences of 'DOC' with a significant data length of 3 automatically generates criteria like 'DOC123', 'DOC744' and others as found within the print job data.

Default: Scan for set of constant triggers

Significant size of data

This is used with method 'Scan for one trigger followed by variable data' and defines the number of characters or digits to be used for the variable part of the criterion.

Trigger Sequence

Each trigger sequence is used as a criterion to be searched on each page. If found, the page is assigned to a partial job depending on the selected method. Characters, which may not be typed in using the keyboard, can be entered with a percent sign '%', following a two digit hex code, e.g. '%0d' for carriage return. To use the doubled percent sign, type '%%'.

To add lines for further trigger sequences, click on the header line of the grid and press the Insert key. To remove a line click into a column of the line to be removed, the click on the header line and press the Del key. With method 'Scan for one trigger followed by variable data', only one trigger sequence is allowed.

Valid

Until next trigger

All pages passing by after the page with the trigger sequence found are classified the same way as the page containing the trigger until another trigger is found. This is also done for subsequent pages containing no trigger.

One page only

The next page after the page with the trigger sequence found is classified as unassigned, if there is no trigger sequence present. This is also done for subsequent pages containing no trigger.

Destination Directory

Defines a path, where the partial job, which will be created depending on the trigger sequence is to be saved.

Name Prefix

This is an optional prefix added to the partial job's file name. The complete file name is built as

<Prefix>.<Job ID>.<Trigger sequence>

<Prefix> is the optional string of up to 8 characters defined in this field. <Job ID> is the optionally added job ID of the incoming print job. <Trigger sequence> is either a constant trigger as defined or the combination of trigger sequence and variable part.

Premature whitespace character terminates variable part

This is only used with method 'Scan for one trigger followed by variable data'. When e.g. the variable part is defined as a sequence of 8 characters, there may be spaces within this length. With this option set, the space character will terminate the variable part even before the length of 8 is reached. With a trigger sequence as 'DOC', the criterion will be 'DOC1234' instead of 'DOC1234 678' when a space is found between the digits 4 and 6. This is also done for other whitespace characters as tab, carriage return, line feed and form feed.

The number of triggers and their length are limited as follows:

- The length of a trigger sequence is limited to 512 characters.
- The possible number of trigger sequence is calculated using the following formula:

  Total of lengths of all trigger + number of trigger + 1 <= 32767

6.4.7.3 Banner Pages

Each partial job created by the Job Separator filter may be optionally enclosed with banner and/or trailer pages.

Add banner page

If this option is set, a banner page is added to each partial print job created by the Job Separator filter.

Add trailer page

If this option is set, a trailer page is added to each partial print job created by the Job Separator filter.

Paper tray

Here, the paper tray is defined, where the paper is drawn for the banner and trailer pages. The paper tray for banner pages may be set to a different tray as for trailer pages.

Orientation

Here, the orientation of the banner and trailer pages is defined. The orientation for banner pages may be set to different as for trailer pages.

User defined banner text

This is an optional field for adding user-specified text to the banner and trailer pages. Any text entered here will be printed to each banner and each trailer page.

Additionally, variables can be used within this field. When typing in the arbitrary text, variables are enclosed with '<' and '>' as '<myvariable>'. Predefined variables are:

<jobname>	Name of the job
<jobnamenoext>	Name of the job (if filename without file extension)
<srcaddress>	Address of senders as IP address or Novell queue name
<username>	Name of user
<destport>	Destination port as queue name from LPD protocol
<destaddress>	Specific device if defined in Logical Printer
<jobid>	Job-ID
<creationtime>	Start time of job
<starttime>	Emulation time of job

This field also supports user-defined variables acquired using the Field Scanner filter.

The Field Scanner filter must be part of the license to be used.

6.4.7.4 Miscellaneous

This page contains some global options concerning the Job Separator filter.

Scan PJL data for trigger

If this option is set, the PJL data part of the print job is also scanned for trigger sequences.

Add job id to names of job files

When this option is set, the ID of the incoming print job is added to the names of the partial print jobs to be created. The complete file name is built as

<Prefix>.<Job ID>.<Trigger sequence>

<Prefix> is an optional string of up to 8 characters. <Job ID> is the job ID of the incoming print job. <Trigger sequence> is either a constant trigger as defined or the combination of trigger sequence and variable part.

If a second job is processed after another, this avoids overwriting created partial job files. As a result the name is different because of the different job id. If this option is not set, the names will be the same and newer created jobs will overwrite previously created jobs.

Add job information data to job files

If sending print jobs to a FORMS4WORK input port, additional information about the print job as source, name etc. can be transferred. This information will be transferred before the print data. To use this feature, the option of the corresponding input port must be checked, too. This option must not be used, if the receiver is not a FORMS4WORK input port.

Standard output receives...

This option controls what is sent to the standard output port of the print process:

nothing

There is no output at all. All pages, classified by trigger sequences, are divided into the partial print jobs; unassigned pages are dropped.

unassigned pages only

All pages, classified by trigger sequences, are divided into the partial print jobs; unassigned pages are sent to the standard output port.

everything

All data is transparently sent also to the standard output port.

Remove trigger sequence

This option controls what happens to the trigger sequences which were detected within the print job data:

not at all

The trigger sequences are untouched.

exactly

The trigger sequences are removed as found with their exact length of characters.

and all until next escape

The trigger sequences and all subsequent data until the next PCL escape sequence are removed.

and all until end of line

The trigger sequences and all subsequent data until the next line feed are removed.

and all until end of page

The trigger sequences and all subsequent data until the end of the page are removed.

6.4.8 Recordchange Filter

6.4.8.1 Application

The Recordchange filter of the FORMS4WORK Server is used in order to change block- or record-oriented data streams from one format to another at the input and/or output of the FORMS4WORK emulations.

The following table shows the current possible input and corresponding output formats of the RECORDCHANGE filter, which may be configured.

From Input Format :	To Output Format :
NPS internal Format	NPS internal Format S/370 Byte or Word Length Record Format (Barr)
S/370 Byte or Word Length Record Format (Barr)	NPS internal Format S/370 Byte or Word Length Record Format (Barr)
Line printer Format	NPS internal Format
Channel Input Format	NPS internal Format
IBM Tapes Input Format	NPS internal Format
BS2000 Channel Input Format	Line printer Format
Microfocus-Cobol Input Format	NPS internal Format
Bull Input Format	NPS internal Format
RS6000 Input Format	NPS internal Format
LCDS Input Format	NPS internal Format
ASCII (Barr) Format	NPS internal Format
CUSTOM#01:<length><user><PCC><data…>	NPS internal Format

6.4.8.2 Configuration

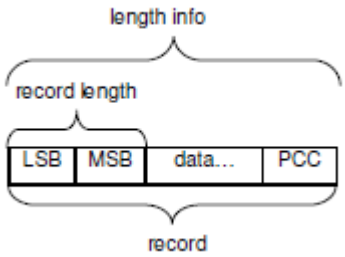
In the configuration dialog of the Recordchange filter the input as well as the output data format is selected. Depending upon the selected format further configuration options can be chosen.

Filter formats

NPS Internal Format

This format is used by X-Metacode to PCL5 emulation as input data format. Likewise PCL5 to X-Metacode emulation produces this format as output data format.

There are no configuration options required for this format.



LSB = Least significant byte, MSB = Most significant byte, PCC = Printer carriage control (1 byte)

The record length (2 bytes) contains the complete length of the record in bytes, including the length of record length itself, e.g. <03><00><0B>. In this case the record contains no user data, only the length info and a PCC byte (<0B>).

The PCC byte is one of the following IBM 1403 (IBM 3211) machine control codes.

Code (hex)	Function	Code (hex)	Function
01	Write (no automatic space)*	0B	Space 1 line immediately
09	Write and space 1 line after printing	13	Space 2 lines immediately
11	Write and space 2 lines after printing	1B	Space 3 lines immediately
19	Write and space 3 lines after printing	8B	Skip to channel 1 immediately
89	Write and skip to channel 1 after printing	93	Skip to channel 2 immediately
91	Write and skip to channel 2 after printing	9B	Skip to channel 3 immediately
99	Write and skip to channel 3 after printing	A3	Skip to channel 4 immediately
A1	Write and skip to channel 4 after printing	AB	Skip to channel 5 immediately
A9	Write and skip to channel 5 after printing	B3	Skip to channel 6 immediately
B1	Write and skip to channel 6 after printing	BB	Skip to channel 7 immediately
B9	Write and skip to channel 7 after printing	C3	Skip to channel 8 immediately
C1	Write and skip to channel 8 after printing	CB	Skip to channel 9 immediately
C9	Write and skip to channel 9 after printing	D3	Skip to channel 10 immediately
D1	Write and skip to channel 10 after printing	DB	Skip to channel 11 immediately
D9	Write and skip to channel 11 after printing	E3	Skip to channel 12 immediately
E1	Write and skip to channel 12 after printing	03	No operation

*A record with a write-type control character immediately preceded by a record with the 'Write (no automatic space)' control character is processed according to the option selected for overprint handling

IBM 1403 (IBM 3211) machine control codes

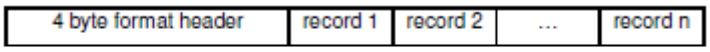
Additionally, we enhanced the IBM 1403 (IBM 3211) machine control codes, in order to support channel commands in the range of 0 … 15 for online jobs. The X-Metacode to PCL5 emulation supports also following additional codes.

Code (hex)	Function	Code (hex)	Function
81	Write and skip to channel 0 after printing	83	Skip to channel 0 immediately
E9	Write and skip to channel 13 after printing	EB	Skip to channel 13 immediately
F1	Write and skip to channel 14 after printing	F3	Skip to channel 14 immediately
F9	Write and skip to channel 15 after printing	FB	Skip to channel 15 immediately

enhanced IBM 1403 (IBM 3211) machine control codes

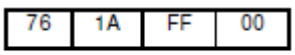
BARR S/370 byte or word record lengths format

This is a typical format of a BARR PC spooling system. There are two S/370 record formats available, S/370 byte length and S/370 word length record format. Files in S/370 record format have a 4 byte format header at the beginning of the file.



Format of files in S/370 record format

The header indicates which format (byte or word length) is being used, therefore the filter detects automatically which format is used based on the header.



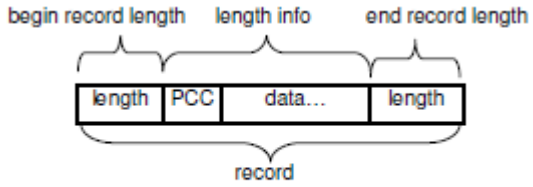
Format header S/370 byte length record format

76	1A	FF	FF

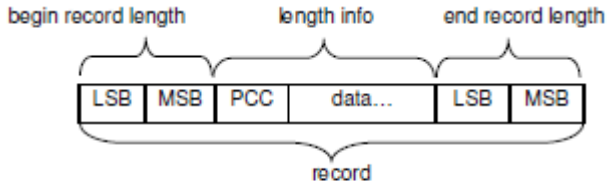
Format header S/370 word length record format

If the format is selected as input format of the Recordchange filter, you can configure here whether the filter has to remove the BARR spool header record and/or the BARR FCB record from the data stream. Details on this data format can be found in the documentation of the BARR S/370 spool software.

If this format is selected as output format of the Recordchange filter, the S/370 word length record format will be used. You can configure here the settings for the BARR spool header record, the BARR FCB record and the BARR spool trailer record. For the possible values see the BARR S/370 spool software documentation. The parameter 'JOB NAME ' of the BARR spool header record is configured by the filter software automatically with the name of the current print job.



S/370 byte length record format



S/370 word length record format

The begin record length and end record length bytes must have the same value. The record length contains the number of data bytes + PCC byte only.

The PCC is a IBM 1403 (IBM 3211) machine control code. Additionally, the Barr software reserves 3 special codes for the PCC.

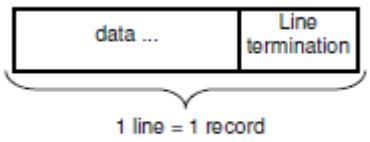
Code (hex)	Function
C6	3211 FCB
FD	Translate next command
FF	Start of spool header record

Commands reserved by Barr software

Line printer Format

This format assumes pure ASCII or EBCDIC printer lines. Each line must be terminated with [<CR>]<LF> or [<CR>]<FF>

<CR> = Carriage Return (optional)
<LF> = Line Feed
<FF> = Form Feed



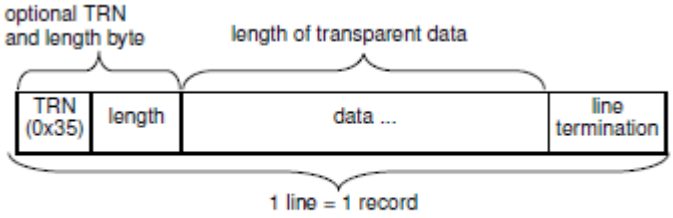
Line printer Format

The line termination <FF> will always be translated into a 'Skip to channel 1' command. The line termination code may not be part of the data.

The line termination code depends on the configured mode ASCII or EBCDIC.

Line termination	Code ASCII (hex)	Code EBCDIC (hex)
<CR>	0D	0D
<LF>	0A	15 or 25
<FF>	0C	0C

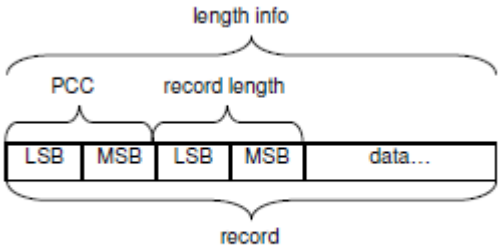
There exists a check box option 'Scan for TRN code (0x35)' for the EBCDIC mode. If activated, the optional transparent code TRN (0x35) followed by one length byte -- if TRN exists-- must be at the beginning of the line. Within the length of the transparent data the 'line termination' code is disabled.



Line printer Format EBCDIC with activated TRN option

Channel Input Format

This data format is produced by the firmware of the channel input card of the FORMS4WORK Server.



Channel Input Format

The record length (2 bytes) contains the complete length of the record in bytes, including the record length itself. The PCC (contained in the LSB) is a IBM 1403 (IBM 3211) machine control code

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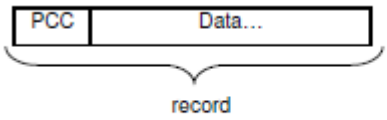
IBM Tapes Input Format

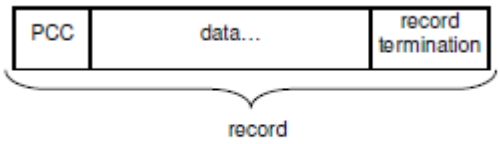
This format may vary from fixed blocked (FB) to variable blocked (VB) as well with different PCC types like

IBM 1403 (IBM 3211) machine control codes or ANSI control codes in US ASCII or EBCDIC. Common to all variations and typical for this format is that the PCC is always at the left position of the user data portion.



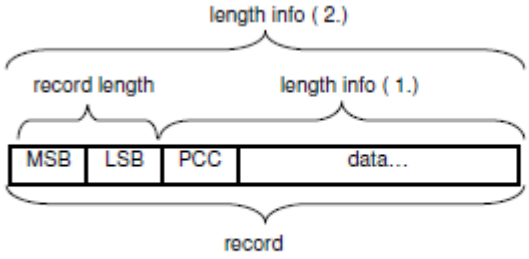
IBM Tapes Input Format (fixed blocked (FB))

The record length is on fixed blocked (FB) format always constant and may be configured (in bytes). The data must be padded with blanks up to the record length.



IBM Tapes Input Format (variable blocked (VB))

The record termination on variable blocked (VB) format must be always [<CR>]<LF> ([hex 0D optional] hex 0A), i.e. these hex codes may not be part of the data record



IBM Tapes Input Format (variable blocked (VB) 2 byte length info)

Instead of a record termination, this format has 2 leading bytes containing the length of the record. There exists two ways of interpreting the record length info:

1. The record length does not include the 2 length byte itself.
2. The record length includes the 2 length byte.

The ANSI control codes (PCC) for IBM tapes are shown in following table.

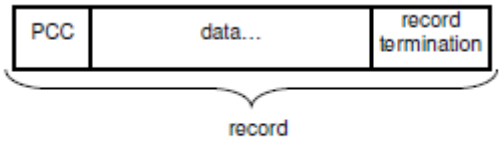
US ASCII graphical character representation	US ASCII tapes code (hex)	EBCDIC tapes code (hex)	Function
Space (blank)	20	40	Space 1 line before printing
0	30	F0	Space 2 lines before printing
-	2D	60	Space 3 lines before printing
+	2B	4E	Suppress space before printing*
1	31	F1	Skip to channel 1 and print
2	32	F2	Skip to channel 2 and print
3	33	F3	Skip to channel 3 and print
4	34	F4	Skip to channel 4 and print
5	35	F5	Skip to channel 5 and print
6	36	F6	Skip to channel 6 and print
7	37	F7	Skip to channel 7 and print
8	38	F8	Skip to channel 8 and print
9	39	F9	Skip to channel 9 and print
A	41	C1	Skip to channel 10 and print
B	42	C2	Skip to channel 11 and print
C	43	C3	Skip to channel 12 and print

*A record with a write-type control character immediately followed by a record with the 'Write (no space)' control character will be processed according to the job descriptor entry option selected for overprint handling

ANSI control codes for IBM tapes

BS2000 Channel Input Format

Each record must be terminated with [<CR>]<LF>



BS2000 Channel Input Format

The record termination code may not be part of the data.

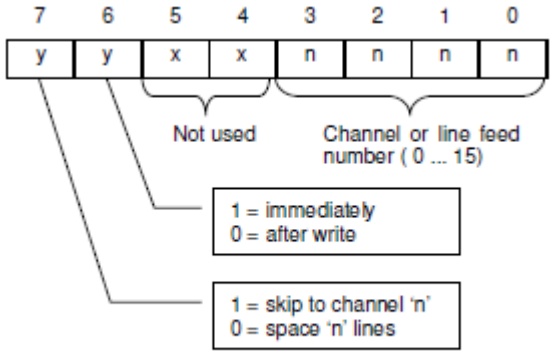
The record termination code depends on the configured mode ASCII or EBCDIC.

Record termination	Code ASCII (hex)	Code EBCDIC (hex)
<CR>	0D	0D
<LF>	0A	15 or 25

Record termination codes of 'BS2000 Channel Input Format'

When 'Line printer Format' is used as output format, depending on the 'PCC input type' configuration, ASCII or EBCDIC line printer data is generated. Also all 'Skip to channel x' commands are translated into a <FF> only.

The PCC is one byte long, where each **bit** has following function.



PCC function of BS2000 Channel Input Format

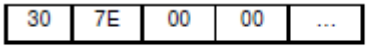
The PCC can be translated via a user defined translation table.

Microfocus-Cobol Input Format

This format was a special customer adaptation. There was no reliable information or documentation about this format. Microfocus-Cobol files may have a optional 128 byte control block header at the beginning of the file.

Format of files in Microfocus-Cobol record format

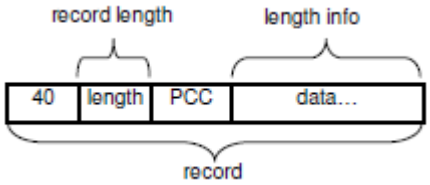
The meaning of the complete header was not documented, but a header can be recognized within the first 4 bytes.



Microfocus-Cobol control block header recognition

The 128 byte header will be recognized automatically and removed.

A record starts always with the hex code 0x40.



The record length (1 byte) contains only the length of the data in bytes.

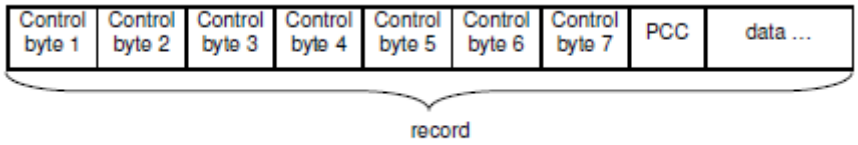
The meaning of the PCC is following :

Code (hex)	Function
50	Write and skip to channel 1 after printing
30 ... 3F	Write and space 'n' lines after printing, where 'n' = 0 ... 15 (the low nibbles of the codes 30 ... 3F) If 'n' = 0 ➔ Write (no automatic space)

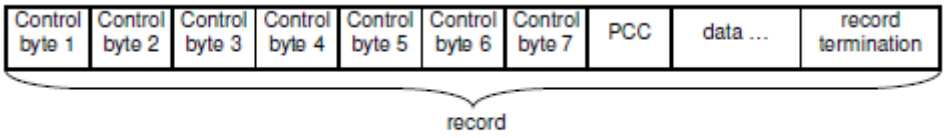
Microfocus-Cobol PCC control codes

Bull Input Format

This format was a special customer adaptation. There was no reliable information or documentation about this format. It may be fixed blocked (FB) or variable blocked (VB).
Each record starts always with 8 control bytes, where byte 8 is the PCC.



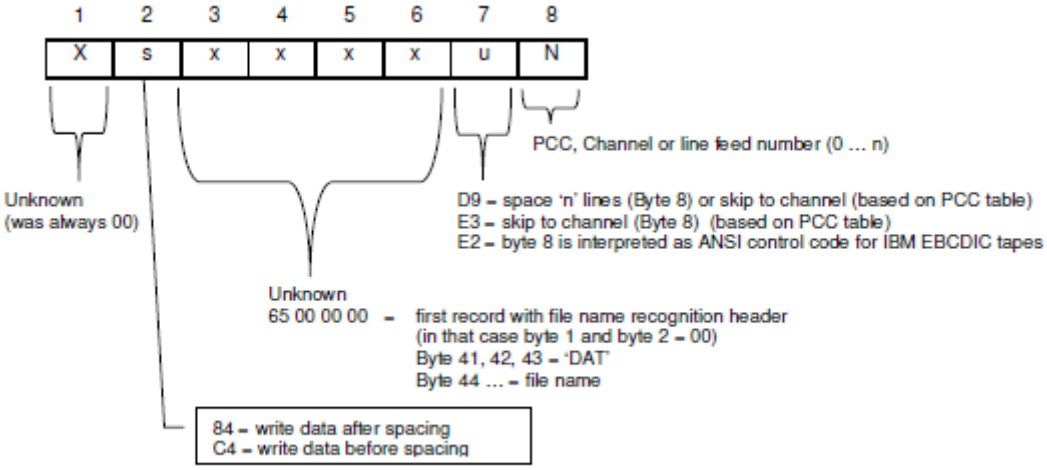
Bull Input Format (fixed blocked (FB))



Bull Input Format (variable blocked (VB))

The record termination on variable blocked (VB) format must be always [<CR>]<LF> ([hex 0D optional] hex 0A), i.e. these hex codes may not be part of the data record.

The meaning of the 8 **control bytes** is following. The most information has been extracted by experience.


1 2 3 4 5 6 7 8
X s x x x x u N
PCC, Channel or line feed number (0 ... n)
Unknown
(was always 00)
D9 – space 'n' lines (Byte 8) or skip to channel (based on PCC table)
E3 – skip to channel (Byte 8) (based on PCC table)
E2 – byte 8 is interpreted as ANSI control code for IBM EBCDIC tapes
Unknown
65 00 00 00 – first record with file name recognition header
(in that case byte 1 and byte 2 – 00)
Byte 41, 42, 43 – 'DAT'
Byte 44 ... – file name
84 – write data after spacing
C4 – write data before spacing

Meaning of the 8 control bytes of 'Bull Input Format'

Value of byte 8 must be translated in accordance to the 4 PCC tables.

There may exist 4 configurable PCC tables (PCC1, PCC2, PCC3 PCC4), which translates the PCC (control byte 8) into following functions. These values has been extracted from some PCC table definitions of the customers JSL's and some has been determined by experience.

Code (hex)	Function	Code (hex)	Function
00	Skip to channel 1	0A	Space 10 lines
01	Space 1 line	0B	Space 11 lines
02	Space 2 lines	0C	Skip to channel 1
03	Space 3 lines	0D	Space 13 lines
04	Space 4 lines	0E	Space 14 lines
05	Space 5 lines	0F	Space 15 lines
06	Space 6 lines	40	Space 1 line
07	Space 7 lines		
08	Space 8 lines		
09	Space 9 lines		

Note: Every other code results per default in a 'Write (no automatic space)' function

PCC1 translation table of 'Bull Input Format'

Code (hex)	Function	Code (hex)	Function
00	Skip to channel 1	0A	Space 10 lines
01	Space 1 line	0B	Space 11 lines
02	Space 2 lines	0C	Space 12 lines
03	Space 3 lines	0D	Space 13 lines
04	Space 4 lines	36	Skip to channel 2
05	Space 5 lines	37	Write (no automatic space)
06	Space 6 lines	3A	Skip to channel 3
07	Space 7 lines	3D	Skip to channel 4
08	Space 8 lines	40	Space 1 line
09	Space 9 lines		

Note: Every other code results per default in a 'Write (no automatic space)' function

PCC2 translation table of 'Bull Input Format'

Code (hex)	Function	Code (hex)	Function
00	Skip to channel 1	0A	Space 10 lines
01	Space 1 line	0B	Space 11 lines
02	Space 2 lines	0C	Space 12 lines
03	Space 3 lines	0D	Space 13 lines
04	Space 4 lines	37	Write (no automatic space)
05	Space 5 lines	40	Space 1 line
06	Space 6 lines		
07	Space 7 lines		
08	Space 8 lines		
09	Space 9 lines		

Note: Every other code results per default in a 'Write (no automatic space)' function

PCC3 translation table of 'Bull Input Format'

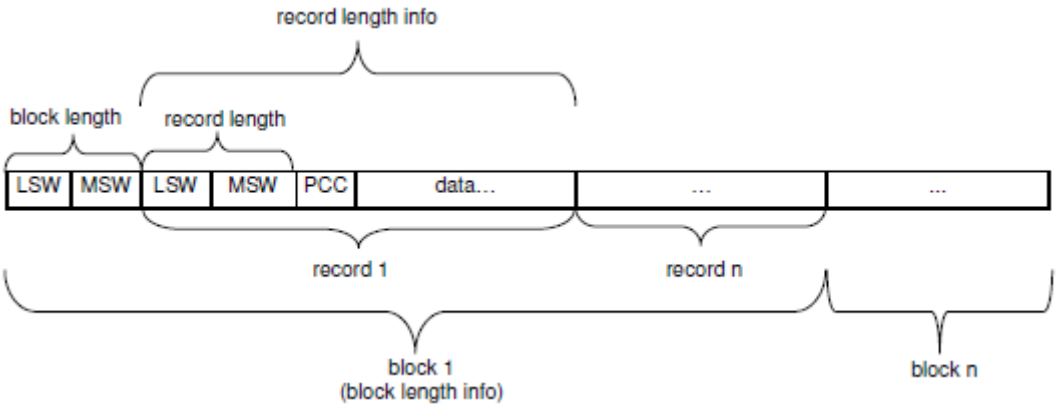
Code (hex)	Function	Code (hex)	Function
00	Skip to channel 1	0E	Skip to channel 4
01	Space 1 line	0F	Skip to channel 5
02	Space 2 lines	1A	Skip to channel 11
03	Space 3 lines	1C	Skip to channel 6
04	Space 4 lines	1D	Skip to channel 7
05	Space 5 lines	23	Skip to channel 8
06	Space 6 lines	26	Skip to channel 2
07	Space 7 lines	37	Write (no automatic space)
08	Space 8 lines	38	Skip to channel 9
09	Write (no automatic space)	3C	Skip to channel 15
0A	Space 10 lines	3E	Skip to channel 12
0B	Skip to channel 13	3F	Skip to channel 3
0C	Skip to channel 14	40	Space 1 line
0D	Skip to channel 10		

Note: Every other code results per default in a 'Write (no automatic space)' function

PCC4 translation table of 'Bull Input Format'

RS6000 Input Format

This format was a special customer adaptation. There was no reliable information or documentation about this format.

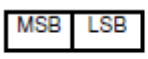


LSW = Least significant word, MSW = Most significant word, PCC = Printer carriage control (1 byte).

The block length and record length is 4 bytes long. The block length contains the complete length of the block in bytes (including the 4 bytes block length info). This block may contain 1 … n records. The record length contains the complete length of the record in bytes (including the 4 bytes record length info).The data stream itself may contain 1 … n blocks.

The PCC is a IBM 1403 (IBM 3211) machine control code.

The byte order of the word (LSW or MSW) is following :



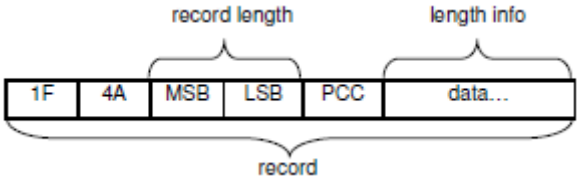
word organization of RS6000 record length

LSB = Least significant byte, MSB = Most significant byte

LCDS Input Format

This format was a special customer adaptation. There was no reliable information or documentation about this format.

A record starts always with a constant two byte record identifier 0x1F 0x4A



The record length (2 byte) contains only the length of the data in bytes. The record identifier will be stripped.

The PCC is a IBM 1403 (IBM 3211) machine control code.

ASCII (BARR) Format

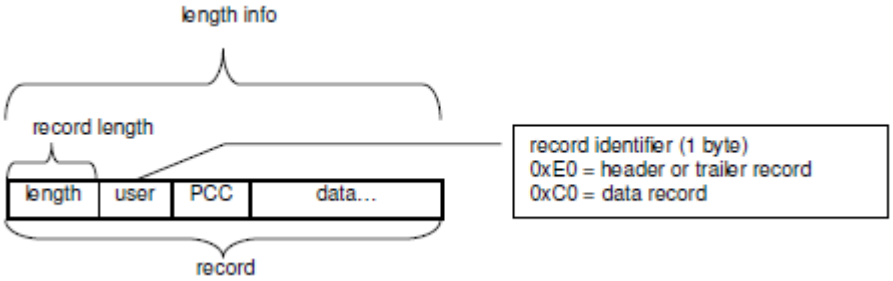
This format was a special customer adaptation. There was no reliable information or documentation about this format.

This format is similar to the 'Line printer Format' with two exceptions.
Exception 1: Empty lines will be padded with a space (blank) character.
Exception 2: Only ASCII input (no EBCDIC) can be processed.

Additionally this filter can be configured to strip a user defined block at the beginning of the data stream.

CUSTOM#01:<length><user><PCC><data...>

This format was a special customer adaptation. There was no reliable information or documentation about this format. Also no information how to interpret a header or trailer record was available.



The record length (1 byte) contains the complete length of the record in bytes, including the length of record length itself. The user byte is a constant record identifier.

A header or trailer record (user byte = 0xE0) will be stripped.

The PCC is a IBM 1403 (IBM 3211) machine control code.

6.4.9 Stringchange Filter

6.4.9.1 Application

The Stringchange filter is used to replace or remove individual characters and character strings in the data stream before and / or after the emulation of the print data.

Examples:

- The input data stream contains control commands which are not supported by the emulation or the output device. Use the Stringchange filter in this case to remove these commands.
- The input data stream contains special characters, such as umlauts, which must be replaced by other characters or character strings, for example 'Ä' becomes 'ae', etc. Use the Stringchange filter in this case to replace characters or character strings.

6.4.9.2 Configuration

The Stringchange filter requires three pieces of information to replace or remove a character or a character string:

- Character or a character string to be replaced ('Search for')
- Character or a character string, which is to replace the source ('Replace with') or empty, if the source is to be removed.
- Consideration to low or high case letters.

Ignore Case

Enable to ignore case of string.

This allows to define whether the replacement is to be completed taking case into account, in other words whether 'abc' and 'Abc' or just 'abc' is to be replaced. The setting applies for all replacements.

Default: disabled

Search for

Shows a list of all the defined source character strings for replacements, in other words which characters or character strings must be replaced.

Replace with

Shows a list of all the defined destination character strings for replacements, in other words the characters or character strings that are to replace the source character strings. If the display is empty, no replacement will be made and the source character string will simply be removed.

Add

Add and define a new replacement.

see Definition of a replacement.

Edit

Edit an already defined replacement.

Remove

Delete a previously defined replacement.

The number of replacements and the length of each replacement are limited as follows:

- A replacement character string is limited to 512 characters.
- The possible number of replacements is calculated using the following formula:

  Total of lengths of all sources + number of sources + 1 <= 32767

6.4.9.3 Definition of a replacement

Define a replacement.

Enter the following information:

Search for

Define character string which is to be replaced.

If case is ignored depends on the setting of 'Ignore Case'.

Characters that cannot be entered using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code. The '%' character itself is displayed as '%%'.

Examples:

- 'Hello' replaces the word 'Hello'
- 'Ä' replaces the German umlaut 'Ä'
- '%0D%0A' replaces the ASCII control characters Carriage Return (CR) and Line Feed (LF).

Replace with

Define character or character string to replace the string defined in 'Search for'.

Leave empty to delete the character string from the data stream. Replacements that cannot be entered using the keyboard are specified with a preceding '%' character and a two-character hexadecimal code.

Examples:

- Search for 'Hello World' Replace with 'Hey You' replaces 'Hello World' with 'Hey You'
- Search for 'Ä' Replace with 'Ae' replaces the umlaut 'Ä' with 'Ae'
- Search for '%0D%0A' Replace with '%0A' replaces CR/LF with LF
- Search for '%1BD' Replace with '' removes ESC-D

6.4.10 Textextractor Filter

6.4.10.1 Application

The Textextractor filter of the FORMS4WORK Server is used to extract pure printable data from PCL data streams at the input and/or output of the FORMS4WORK emulations.

The resulting data stream may be used for further processing and consists of pure printable data which may contain ASCII control codes like <CR>, <LF> or <FF> (depends on configuration of the filter).

6.4.10.2 Configuration

The default settings of the Textextractor filter are set to generate a ASCII formatted output that will represent approximately the printable page layout of the origin PCL data stream.

6.4.10.2.1 Optimize

Extract also text within macros

When active, the printable data within a PCL macro will be inserted to the output at each macro execute or call.

Detect simulated bold printing and remove multiple characters/words

Some applications might print the same text elements twice or more at slightly the same X position in order to simulate bold printing on a laser printer.
e.g. ...<*ESC*>*&f0S*Bolded text<*ESC*>*&f1S*<*ESC*>*&a+3H*Bolded text...
Such a sequence would result into printable output like ...Bolded textBolded text...
To avoid these multiple text strings activate the detect bold option.

Sort lines in ascending Y order

The printable data will be send to the output in dependance of the Y position of the text element from top of page to bottom of page. Otherwise the text elements are given out at the scope they are encountered.

Combine lines within threshhold

When active, all text elements on a Y position ± threshhold (in 1/300 Inch) are considered as text elements on the the same line position.

Insert multiple space delimiters for horizontal moves

When active, for each horizontal X movement between text elements, one or multiple space delimiter (if given, see Delimiter) are inserted.

Space delimiter width

Define here the width of the space delimiter. This determines the number of inserted space delimiter between text elements.
i.e. 'number of inserted space delimiter' = 'X movement' / 'width of the space delimiter'

Fixed user width in CPI
Sets the width of the space delimiter to the given fix value in CPI (Characters Per Inch).

Use current HMI
Sets the width of the space delimiter to the current HMI (Horizontal Motion Index) of the PCL environment.

6.4.10.2.2 Delimiter

Each delimiter may be a arbitrary character sequence. Non printable codes may be entered as 2 digit hex values preceeded by a '%' character, e.g. %0C for a form feed <FF>.

There exists some special keywords for delimiters which must be enclosed into **<**...**>** and may be used as dynamic variables. These variables will be replaced with the current values.

Possible delimiter keywords :

Keyword :	Function :
<pjljobname>	The @PJL JOB NAME=...
<pagecount>	Current PCL page counter
<jobname>	Name of the job
<srcaddress>	Address of senders as IP address or Novell queue name
<username>	Name of user
<destport>	Destination port as queue name from LPD protocol
<destaddress>	Specific device if defined in Logical Printer
<jobid>	Job-ID
<ticks>	Milliseconds since system start
<date>	Date
<time>	Time
<creationtime>	Start time of job
<starttime>	Emulation time of job

Job delimiter

Job header

Inserts the given sequence at the begin of the job.

Job trailer

Inserts the given sequence at the end of the job.

Page prefix

Inserts the given sequence at the begin of each page.

Page postfix

Inserts the given sequence at the end of each page.

Text line delimiter

Prefix

Inserts the given sequence at the begin of each line.

Postfix

Inserts the given sequence at the end of each line.

Space delimiter

Defines a sequence for a space delimiter which may be inserted at horizontal X movements.
(if activated, see Optimize)

6.5 Overlay Manager

6.5.1 Overview

Overlay Manager - Overview

Using the Overlay Manager it is possible to define overlays as PCL macro data which is added to an ASCII formatted print job or PCL jobs. Each page of the print job can have a different overlay which will be added to the corresponding page.

This application is similar to usage of preprinted paper forms. Using plain paper sheets, the form will be added as overlay to the print job.

The Overlay Manager enables you to define different configurations for different print jobs. Using this feature, it is possible to use specific overlays for print jobs when a so called trigger string has been detected.

A specific configuration for overlays is called Configuration Profile. Which profile you are working on at configuration time, is displayed in the combo box. Each profile is using the same parameters:

- ASCII / PCL Format
- General
- Overlays
- Pages without overlay
- Fonts

6.5.2 Configuration

6.5.2.1 ASCII / PCL Format

Plain Text Format (ASCII)

Select this option if print job data is delivered containing plain ASCII formatted data without any control codes. In this case print jobs have to be formatted using spaces, carriage returns and line feeds for a proper print out on the paper.

Printer Command Language (PCL)

Select this option if print job data is delivered as a complete PCL print job. In this case print jobs must contain data with standard PCL commands.

Some printer drivers especially in Windows are using printer specific extensions of PCL standard. These extensions may not be processed by the Overlay Manager or produce problems with the printed output. Please use a printer driver which produces PCL closest to the standard, like HP LaserJet Series II or HP LaserJet 5Si.

6.5.2.2 General

New

Creates a new Configuration Profile. The new profile is automatically selected and preset with some standard values.

Add...

Adds a new profile from a disk file to the list Configuration Profile. The added profile becomes also the current profile.

Replace...

Replaces the current profile with a profile which will be read from a disk file.

Save as...

Saves the current profile to a file on the disk. This file later on can be read using the buttons Add and Replace.

Delete

Deletes the current profile, if you answer the question if you sure with yes.

Profile Name

Arbitrary name of the current Configuration Profile

Trigger String

Here you have to define a character sequence (Trigger String), which is unique and should be near the beginning of the print job. This character sequence - if present - will activate the current profile.

This input field requires character strings which may contain characters which can not be entered using the keyboard. These are usually control characters as <ESC> or <CR><LF>. You can enter these characters by their hexadecimal value with a preceding '%' sign. The '%' sign itself is entered as '%%'.

Example: '<ESC>100%' is entered as '%1B100%%'.

Default Configuration

If this field is switched on, the current Configuration Profile will be used as standard profile, i.e. this configuration will be used as long as no Trigger String will activate another Configuration Profile.

Keep current configuration after job

If this field is switched on, the current Configuration Profile will be used until another Configuration Profile is loaded by detection of its Trigger String also for new jobs.

If turned off, the Configuration Profile will be changed due to a Trigger String, but after the job the standard profile will be used again.

Transparent Mode

If this field is switched on, the current Configuration Profile as a standard profile can also process jobs which are not in ASCII format. In this case this Configuration Profile cannot add any overlay

This is commonly used to define a transparent standard profile, which is able do process all kind of print jobs and later is switched to other Configuration Profiles for processing overlays due to Trigger Strings in special jobs.

Use Init Sequence

This option is only available with ASCII formatted print jobs.

Select this field to initialize the printer at beginning of the print job. The initialization consists of parameters for Page Definition, parameters for Default Font and additional User Commands.

Usually you must initialize the printer at least using a Default Font. Because of this, this field will be activated in most cases. But if the print job has passed an emulation which will control the fonts it might be necessary to suppress the initialization.

PJL User Commands

This option is only available with ASCII formatted print jobs.

Here you can add your own specific PJL commands which will be send for initialization at the beginning of the print job.

Page Definition

This option is only available with ASCII formatted print jobs.

Using this button you will enter a dialog for paper oriented parameters concerning paper size, orientation, single side or double side printing. Here you also define how your printer is switched to edge-to-edge printing.

Default Font

This option is only available with ASCII formatted print jobs.

Using this button you will enter a dialog for setting up the default font for the printing of the print job data. Possible settings are:

Usual Setting, for using a standard PCL Font,

Font File, for using a soft font from a file on disk,

User Defined, for using a special PCL command, i.e. if you want select a font from an additional font cartridge of the printer.

Using parameters Characters Per Inch and Lines Per Inch it is possible to control the size and the so called horizontal (HMI) or vertical (VMI) motion index the printer is using with the selected font.

PCL User Commands

This option is only available with ASCII formatted print jobs.

Here you can add your own specific PCL commands which will be send for initialization at the beginning of the print job.

Page Separation Command

This option is only available with ASCII formatted print jobs.

The character sequence which is defined here is interpreted as the page separator. Using ASCII formatted data it is always the character for form feed (FF = '%0C'). Other character strings can be used instead.

This input field requires character strings which may contain characters which can not be entered using the keyboard. These are usually control characters as <FF>. You can enter these characters by their hexadecimal value with a preceding '%' sign. The '%' sign itself is entered as '%%'.

Lines Per Page

This option is only available with ASCII formatted print jobs.

If no page separation command can be found within the print job data, this limitation of lines per page controls, when a page break is added. A line is detected by the ASCII line feed character (LF = '%0A').

Separating pages by a number of lines has higher priority than a page separator command. I.e. if the configured number of lines is reached, a page break will always be added, although the 'real' page break

command might be placed later within the data stream.

Duplicate Page Separation

This option is only available with ASCII formatted print jobs.

If a print job should be printed as a duplex job but was created as a simplex job on the host system, this option can be used to duplicate the page separation. If enabled, after each frontside an empty backside will be inserted, which may also used for insertion of overlays.

This switch is enabled only, if a duplex configuration is set under Page Definition.

Skip Empty Pages

This option is only available with ASCII formatted print jobs.

Activate this field if blank pages should be suppressed.

Macro ID numbers start at

This option is only available with PCL formatted print jobs.

To avoid overwriting preexisting macros on your printer, you may define a start value that is higher than any of the existing. Macros created by the Overlay Manager will have IDs starting at the defined value.

6.5.2.3 Overlays

Page #

To each page of a print job a PCL data file or a PCL command sequence can be added as an overlay. To spare a page just leave the input fields for the overlays blank. If more pages are printed than overlays are defined, the overlay order is repeated from page one.

Example 1: The first page should be printed using overlay A and the second page using overlay B.

Therefore you enter at Page 1 the file for overlay A and the file for overlay B at Page 2. All odd pages 1,3,5,... are printed now using overlay A and all even pages 2,4,6,... using overlay B.

Example 2: Additional to example 1 each 3rd page should be printed without an overlay.

To manage that, enter the overlay files for page 1 and 2 as described above. Additionally enter an empty field for overlay data at Page 3.

The counting of pages will re-start at page 1 after . Pages, which are defined as , due to a unique byte sequence in their data, are not counted at all.

Copy #

Furthermore it is possible to generate copies of each page using different overlays for each copy. Therefore the data of the print job will send more than once to the printer.

Example: Page 1 is to be printed with 2 copies. The original page is to be printed using overlay A, the first copy using overlay B and the second copy using overlay C.

Therefore enter at Page 1, Copy 1 the file for overlay A, at Page 1, Copy 2 the file for overlay B and at Page 1, Copy 3 the file for overlay C.

Background Overlay

Enter name and path of the PCL file here, to be added to the page **before** printing job data.

Rotation

Select the rotation of the background overlay in steps of 90 degrees.

Foreground Overlay

Enter name and path of the PCL file here, to be added to the page **after** printing job data.

Rotation

Select the rotation of the foreground overlay in steps of 90 degrees.

Paper Source

This field controls the paper source for the page using the overlay. Select the desired paper source of the printer from the list of paper trays.

Output Bin

This field controls the output tray for the page using the overlay. Select the desired output bin of the printer from the list of output bins.

Horz. Text Offset

Using this parameter you can move the output of the print job's text horizontally on the overlay. The movement will be done relatively to the original position.

Vert. Text Offset

Using this parameter you can move the output of the print job's text vertically on the overlay. The movement will be done relatively to the original position.

Duplexing

Single side printed sheets can be changed to double side printed sheets here. Select the mode for duplex printing or select 'none' to keep single sided printing.

This option is available with PCL formatted print jobs only. Inserting backsides will be done for single sided sheets only. For already double side printed sheets the setting will be ignored.

Backside Macro

Enter name and path of the PCL file here, to be inserted an additional backside according to the settings at Duplexing.

This option is available with PCL formatted print jobs only. Inserting this file as backside will be done for single sided sheets only. For already double side printed sheets the setting will be ignored.

Rotation

Select the rotation of the backside macro in steps of 90 degrees.

Reset Trigger

A Reset Trigger can be defined for every page. If this trigger is detected in the data stream, execution will continue at the page defined in column Page.

6.5.2.4 Pages without overlay

Trigger String

Here you define character sequences (Trigger Strings) which define pages without overlays. If one of these sequences is found on a page, this page will be printed without an overlay. Also this page will not be counted in the calculation of the overlay order defined under Overlays.

Paper Source

This field controls the paper source for the page using the overlay. Select the desired paper source of the printer from the list of paper trays.

Horz. Text Offset

This option is only available with ASCII formatted print jobs.

Using this parameter you can move the output of the print job's text horizontally on the overlay.

Vert. Text Offset

This option is only available with ASCII formatted print jobs.

Using this parameter you can move the output of the print job's text vertically on the overlay.

6.5.2.5 Fonts

This options are only available with ASCII formatted print jobs.

Trigger String

Here you enter a list of character sequences (Trigger String) which correspond to fonts or PCL command sequences for font selection. If one of these character sequences is found in the print data it will be replaced by the corresponding PCL command sequence or the corresponding PCL soft font which was read from the entered font file will be activated.

Font File / PCL Command

Using the button you will enter a dialog for setting up the default font for the printing of the print job data. Possible settings are:

Usual Setting, for using a standard PCL Font,

Font File, for using a soft font from a file on disk,

User Defined, for using a special PCL command, i.e. if you want select a font from an additional font cartridge of the printer.

Using parameters Characters Per Inch and Lines Per Inch it is possible to control the size and the so called horizontal (HMI) or vertical (VMI) motion index the printer is using with the selected font.

6.6 Output Ports

6.6.1 Overview

Output ports are used as ports for the output of print data. Currently two different output types are supported:

- Channel
- System Device
- File
- Printer
- SMTP
- TCP/IP / Local TCP
- Fiery

To define a new output

To define a new output port in the system, proceed as follows:

1. In the main program window, select a Logical Printer.

2. Edit the highlighted Logical Printer, either by clicking on the 'Edit Logical Printer...' button or by menu: setup/edit Logical Printer...

3. Select the current output (default: Fiery) from 'Output Interface'.

4. Click on 'Remove...' to remove the current output.

5. Click on 'Add...' to add a new output.

6. A dialog box appears. Select the required output from the list.

7. Click 'OK'. The new output is now active.

6.6.2 Properties

6.6.2.1 Fiery

Connection

IP Address

Enter IP Address or DNS name of the Fiery Controller.

Username

Enter username for connecting to the Fiery Controller.

Default: admin

Password

Enter password for connecting to the Fiery Controller.

Properties

Logical Printer

Select logical printer of the Fiery Controller where the print jobs will be sent to.

Possible values are:

- direct
- print
- hold

Default: print

Timeout

Set timeout for the communication with the Fiery Controller.

Possible values range from 3 to 120 seconds.

Default: 30 seconds

Disconnect after job transmission

Enable this option to disconnect FORMS4WORK from the Fiery Controller after each print job.

If a new job occurs FORMS4WORK will re-connect. Disable this option if connecting to the Fiery Controller takes too long.

Default: disabled

6.6.2.2 Settings

Buffer

Read block size

Block size for read operations in KB. When data are received, the data are read in blocks of the specified size as long as the port supports this. However, this only concerns output ports that supply a response, such as a bi-directional printer port. Normally a block size of 32 KB is used.

Maximum size of receive buffer

Maximum size of the internal data buffer. If the data that are received at the output (responses from the output device) cannot be processed, the data are nevertheless accepted and placed in a buffer. This value defines the maximum size of this buffer. When the receive buffer is full, no more data can be accepted until the data can be processed and the buffer is thus emptied. If no value is entered here, the size of the buffer is only limited by the available hard disk space.

Timeouts

Read Timeout

Timeout for data reception. This value allows the time properties of FORMS4WORK for read operations to be influenced. This value should only be changed by experienced users.

Write Timeout

Timeout for data output. This value allows the time properties of FORMS4WORK for write operations to be influenced. This value should only be changed by experienced users.

Delay, if data received

Print jobs that arrive at the same time are processed in parallel. Each print job is allocated a certain amount of processor time for this purpose, which it must share with other print jobs. This value allows you to enter the time in milliseconds that a print job may be delayed in receiving data so that other print jobs can be completed fluently.

Delay, if no data received

If no data are currently being received for a print job, the print job may be delayed and the available processor time can be assigned to other print jobs. This value defines the time in milliseconds that a print job can be delayed if no data are currently being received for this print job.

Execute command after printing

It is possible to execute an external program after a job is completed. Therefore you have to enter the path and filename of the program file here. The specified program is executed, after the job is printed.

Optional placeholders can be used as parameters:

<jobid> ID of the job
<jobname> Name of the job
<srcaddress> Address of senders as IP address or Novell queue name
<dstaddress> Destination address of a job
<username> Name of user
<destport> Destination port as queue name from LPD protocol
<starttime> Time when job started
<endtime> Time when job was printed
<jobsize> Size of the job
<filename> Name of the output file (file ports only)
<filesize> Size of the output file (file ports only)

6.6.2.3 Device Assignment

It is possible to connect alternative devices to an *output port*, to which data will be sent. If the main device is out of order or not available the alternative devices will be used. This can be used to realize a simple kind of load balancing or a so called printer pool. At maximum 10 alternative devices can be defined.

Only devices connected to the same type of *output port* can be used as alternative devices. This means it is not possible to use for example a device which is connected to an *output port* of type *printer* as an alternative device of an *output port* of type *TCP/IP*.

Use if error occurred

The priority of usage depends on the position in the list where high priority is placed on top and low priority on bottom. If a print job could not be sent to the first device, the second one will be used. If the second device is also unavailable the third one will be tried and so on. If all devices were not reachable the first one will be tried again.

Round-robin

For every print job the next device in the list is used.

Load Balancing

Every print job will be sent to a device, which is currently not used. The priority of usage depends on the position in the list.

Use depending on page count

For every device a lower limit of the page count can be specified. Jobs will be sent only to the appropriate device. The jobs have to be spooled, so that the total page count is known. Please note that the page counting of a raw emulation must be activated in the configuration. Jobs with unknown page count will be sent to the default device.

If the FORMS4WORK license does not include *Clustering*, only the 'Use if error occurred' method is

available!

Add...

Click here to add an alternative device to the list.

Edit...

Click here to edit an alternative device.

Delete...

Click here to delete the selected alternative device from the list.

Move up

Click here to move the selected alternative device to a position above. This will increase its priority of usage. If using the 'Page count' method, the position is not relevant.

Move down

Click here to move the selected alternative device to a position below. This will decrease its priority of usage. If using the 'Page count' method, the position is not relevant.

Redirect after x min, if busy

If a connect to a device fails, it will be retried within the given amount of time. If a connect was not successful after this time, the job will be reprinted using the next alternative device.

Default: 0,0 (off)

Redirect complete job / missing pages after x min, if no print activity

If no progress of the print job is detected within the given amount of time the job will be canceled and be reprinted using the next alternative device. It is recommended that Job Monitoring is enabled. A job may only be reprinted if Spooling is enabled.

If a job was canceled by the Progress Timeout while it was printing, the whole job will be reprinted using an alternative device if this option is activated.
If deactivated, only the missing pages are redirected to an alternative device.

If the FORMS4WORK license does not include *Reprinting*, this option is not available!

Default: disabled

6.6.2.4 Job Monitoring

Job Monitoring

Active

Enable this option to get feedback concerning the output state of a print job from the printer.

Job Monitoring also must be enabled to get feedback from the printer about printed pages. The job state will be set to 'Printed' not before the printer has reported the job as completed. If disabled, only the converted pages are shown but not the printed and a job becomes the state 'Printed' as soon as the job data have been transferred to the printer.

Job Monitoring is not supported by all output interfaces. A bi-directional connection must be established during the printing process.

Page Notification

The host system will get feedback when a page has been printed.

Job Notification

The host system will get feedback when a job has been printed.

Job Notification is not available if the Spooling option is enabled.

Default: Job Monitoring active and Job Notification enabled.

6.6.2.5 Data (Output Port)

Data encryption

No encryption

The data will be sent uncompressed and uncrypted.

Compress data

The print job data will be compressed. The compression ratio depends on the data. The receiving FORMS4WORK system will unpack and decrypt print job data if the option Decompress and decrypt data automatically is activated at the corresponding input port. This option is useful if network load is to be reduced.

Compress and encrypt data

If this option is activated, the print job data will be compressed and encrypted. The encryption algorithm can be chosen from AES (Rijndael), Blowfish or DES. DES is no longer considered secure, but is available for compatibility with older FORMS4WORK versions. The receiving FORMS4WORK system will unpack and decrypt print job data if the option Decompress and decrypt data automatically is activated at the corresponding input port. This option is useful if network load is to be reduced and / or due to security reasons.

Use 'Compress data' or 'Compress and encrypt data' only when a second FORMS4WORK System is receiving the data on the other side.

Zip Output

The output data will be zipped.

Password

Password used to encrypt the data. The receiving FORMS4WORK must have the same password specified in its receiving input port. If there is no password specified, FORMS4WORK will use its internal default password.

Send job information within data stream

If sending print jobs to a FORMS4WORK input port, additional information about the print job as source, name etc. can be transferred. This information will be transferred before the print data. To use this feature, the option of the corresponding input port must be checked, too. This option must not be used, if the receiver is not a FORMS4WORK input port.

Strip PJL Feedback

If activated, PJL feedback of a printer will be stripped off. Deactivate this option, if the sending host should receive PJL feedback from the printer.

Only available if supported by the specific output port.

6.6.2.6 Data Capturing (Output Port)

Converted Data Capturing

Data capturing allows to write data to a file after the data is converted by the emulation. This feature should only be used for testing purposes because it slows down the system performance.

Active

Set to 'Active' to log sent data.

Default directory for the log file is [FORMS4WORK application path]\DATA\DSPPATHx, default name of the log file is Oxxxx.DAT. Each job is placed in a separate file.

Default: not active

Without protocol data / With protocol data

Set if you want the protocol data to be saved to the log file, too.

Default: Without protocol data

Maximum files to capture

Define the maximum number of files to be captured.

Default: 99

If the specified maximum number of files is reached, older files will be overwritten.

- **Maximum size (MB)**

Define the maximum number of megabytes per job to be captured.

Default: 0 (unlimited)

Maximum hours to keep

Files will be deleted after the specified number of hours.

Default: 720

Files may be deleted earlier, if the specified maximum number of files is reached.

Add job name to captured filename

Enable if you want the job name to be added to the captured filename.

The job name will be added in parenthesis to the captured filename.

Default: enabled

6.6.2.7 Spooling

Spooling is recommended if print jobs shall be re-printed. Input jobs are stored on the hard disk. FORMS4WORK Server then automatically takes care of the output of the print jobs spooled on the hard disk. Spooled jobs may manually be re-printed later.

If this setting is not active, no spooling takes place. A job is printed directly without being buffered. The sender will be blocked until the data have been output in full.

If Spooling is enabled Page Notification is not possible and will be disabled.

Active

Set to 'Active' to spool input jobs (i.e. to buffer these jobs on the hard disk).

Default: not active

Spool directory

Define directory where the integrated spooler shall save the print jobs and the corresponding job information.

This directory must be placed on a drive with sufficient capacity for storage.

Retry after <x> sec, if busy

Set interval when to retry to output again on a currently busy printer.

The output of a spooled print job is delayed by this time. After this time a fresh attempt is made to output the data on the device.

Default: 30 seconds

Process at most <x> jobs concurrently

Define the maximum number of spooled print jobs that can be output at the same time. Other print jobs are not processed until the number falls below the maximum again. Possible values range from 0 to 99. If no value is entered, the number of concurrent print jobs is not limited.

Default: 1

Allow alteration of job sequence if applicable

If disabled, the job sequence is strictly maintained. It is guaranteed that older jobs are printed first. Please note, that a job in an error state may prevent succeeding jobs from being printed.

If enabled, the system may change the job sequence. A job in an error state does not prevent succeeding jobs from being printed.

Default: enabled

Compress spool files

Enable to compress spool files.

This is recommended if disk space is sparse.

Default: disabled

Start printing even if job is not completely spooled

Enable to send print jobs to the output port as soon as the integrated spooler is collecting the data of the jobs.

If this option is disabled, print jobs are only sent to the output port as soon as they are completely processed by the emulation.

Default: disabled

Scheduled printing

Set time controlled job processing.

Time of printing, delay time and time restriction for processing of jobs can be defined.

see Scheduled Printing

Default: enabled

Keep spooled jobs after printing

Enable to keep spooled jobs after printing.

Here you define whether print jobs are held for security purpose after printing and how long they are held. Held print jobs can be sent to the output port again if there were problems sending them before. The amount of time the print jobs are held is defined in hours and/or minutes. If both values are set to zero, the jobs are held until they are deleted manually.

Print jobs require storage capacity in the spool directory.

Default: disabled

Keep at the most <x> jobs

Enter the number of print jobs to be kept at the most.

For any further job above this number, the oldest job is deleted automatically.

Leave empty for unlimited number of jobs.

Default: empty (unlimited)

6.6.2.8 Scheduled printing

Affects the time when jobs are being printed. Printing of jobs can be delayed or jobs can be printed only at a specific time.

Delayed printing

- **Do not delay printing:** Set if print jobs shall be processed normally. The output, however, can be restricted in time by setting a print period.
- **Delay printing until:** Set to delay output of print jobs to a specific date / time. All processed jobs are held until the specified date / time.
- **Delay printing for <x> sec:** Set to delay output of print jobs using a specific number of seconds. All incoming jobs are held for this time before they get processed. During this time it is possible to manipulate the job attributes and the job processing time.
- **Hold jobs (print manually):** Set to hold all print jobs and not print them automatically. The print jobs

are hold until they are manually selected for printing.

Default: Hold jobs (print manually)

Print period

Set to process print jobs all the time but only to be sent to the output port at a specified time. Then all arriving jobs will be emulated and held by the integrated spooler until the specified time is reached. The specified time period is repeating daily.

Example: You want to print on the output device only between 11:00 PM and 05:00 AM. In this case all arriving jobs are held and only sent to the output port during the specified period of day time.

Default: disabled

6.6.3 Channel

6.6.3.1 Channel Output

A channel output device must be installed on your FORMS4WORK server in order to work with this interface.

6.6.4 System Device

6.6.4.1 System Device (Output Port)

Device

This is where the required system device or the port is selected. The list contains all known system devices on the system. If the required system device is not on the list, it can be entered manually.

Queue sizes

Device-internal buffer size for receiving and sending data. If read errors occur when data are being received, it may be due to the fact that the data cannot be processed quickly enough which causes the device-internal buffer to overflow. In this case the input buffer size should be increased. The buffer size of the output is normally 0.

Serial Settings

The data for a serial connection, such as the baud rate, number of data bits, parity, number of stop bits and the handshake method can be defined here.

If the system device is not a serial device, this setting must not be activated.

RTS/CTS handshake should be used wherever possible as the handshake method.

If the XON/XOFF method is used, the XON and XOFF character should also be defined (the default values are ASCII characters 17 (XON) and 19 (XOFF). The XON limit defines the maximum number of bytes in the input buffer before the XON character is sent. The XOFF limit defines the maximum number of bytes in the input buffer before the XOFF character is sent.

6.6.5 File

6.6.5.1 Filename (Output File Port)

Converted data can be written to a file, not only be sent to a printer.

Default Filename

The file output port writes the data into the file defined here (including path) if 'Default device' has been entered in the Logical Printer editor.

File patterns may also be entered. In this case a new, unique file name is then created for each job. Entering C:\FORMS4WORK\OUT*.BIN creates a file called OUTxxxx.BIN for each job in the directory C:\FORMS4WORK.

Job specific data, too, can be used for file name creation. The following fields can be used as variables:

<jobname>	Name of the job
<jobnamenoext>	Name of the job (if filename without file extension)
<srcaddress>	Address of senders as IP address or Novell queue name
<username>	Name of user
<destport>	Destination port as queue name from LPD protocol
<destaddress>	Specific device if defined in Logical Printer
<jobid>	Job-ID
<ticks>	Milliseconds since system start
<date>	Date
<time>	Time
<creationtime>	Start time of job
<starttime>	Emulation time of job

An asterisk '*' can be used optionally after the variables. This will create unique file names.
Examples:

- 'C:\OUTPUTDIR\<jobname>.PRN' will create files as XYZ.PRN, where XYZ is the job name.
- 'C:\OUTPUTDIR\<jobname>*.PRN' will create unique files as XYZ1234.PRN.

Which variables of the job information really contain values is depending on which Input Port and protocol is used. A LPD Input Port for example cannot give a Novell queue name, a Novell Input Port does not support a destination port, etc.

Don't overwrite existing file

If the output file already exists, it is not overwritten. The output of the data is delayed until the existing file has been deleted.

Delete existing file

If the output file already exists, it is deleted first.

Append if file exists

If the output file already exists, the data are appended to this file.

If a file has been opened by another program or process, FORMS4WORK may not be able to open this file. To ensure that data can be written into the file and the job can continue to be processed, the external access to the file must be terminated. If a file is write-protected, FORMS4WORK will also be unable to output to this file.

6.6.6 Printers

6.6.6.1 Printers

Default Printer

The list contains all the printers known to the operating system (Windows NT/9x). The required printer can be selected or an arbitrary printer, which exists in the network, can be specified manually, to which the data are to be output.

If a printer is added in Windows it will appear in the list after the next start of the FORMS4WORK Server. If you want to use a printer which is currently not displayed in the list, you can enter the name of the printer manually.

6.6.7 SMTP

6.6.7.1 SMTP

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

FORMS4WORK is able to send print jobs as emails using a mail server. To do this a mail server using SMTP protocol is required and some parameters, which are defined in this dialog page:

SMTP Server

The hostname or the IP address of the mail server which is to be used for sending the print jobs. If a hostname is entered here instead of an IP address, resolving via DNS must be guaranteed.

SMTP Port

The TCP port which is to be used for communication with the mail server. Usually port 25 is used, but others are possible. Please note that the required TCP port is defined by the mail server.

Username

The Username, which is used by FORMS4WORK to connect to the SMTP server. Some SMTP servers deny sending emails if not connected as a user which is known to the server; in most cases this parameter is not necessary.

From Address

Email address of sender using format name@xyz.com or "Friendly Name" <name@xyz.com>.

Receiver

The email address of the receiver to which the print job has to be send to.

The address of the receiver can be overwritten by job information data. I.g. if a print job has been received by a POP3 Input Port and the mail body contained a definition for Destination in form of an email address, this address can be used as receiver. To get this working, please use the option 'Device as delivered by protocol' when defining the rules.

Confirmation

Optional email address where a reading confirmation should be sent to.

Default Extension

Attachments will be named using the name of the print job. If the print job name does not already have a file extension, the specified extension will be added.

Force Extension

The specified Default Extension will be added, even if the print job already has another extension.

More...

Optional subject and/or email text can be defined here. Instead of an email text a filename can be defined. In this case the content of the file will be used as email text.

6.6.8 TCP/IP

6.6.8.1 Address (TCP/IP Output)

Microsoft Winsock 2 must be installed on the FORMS4WORK server! This is the case with Windows NT 4.0 Service Pack 3 or higher and Windows 98. With Windows 95 an update available from Microsoft is necessary.

Local Address

In case the FORMS4WORK system is using multiple IP addresses, enter here one IP address of the computer that is to be used for communication. If the computer has only one local address, the field may remain empty.

Port

TCP/IP port, to which the data are to be sent.

Default Remote Address

IP address or DNS name of the printer or host computer to which the data are to be sent.

If a Local TCP Port is used, the Default Remote Address may not be changed and is always 127.0.0.1 (localhost). The data will be crypted and may only be sent to a FORMS4WORK Local TCP Input Port.

Input Buffer Size

Internal buffer size for storage purposes when receiving data from the printer or host computer. If data arrive more quickly than they can be processed, they are placed in a buffer. This size of this buffer can be defined here and is generally 256 KB.

Connect Timeout

Defines the maximum of time in seconds, for which FORMS4WORK tries to establish a connection to a remote host / printer.

Linger Timeout

Defines the maximum of time in seconds, for which a TCP session may try to send remaining data before closing connection.

If no value is entered here, the connection is not closed before all data was sent to the receiver. The

session will then be closed normally using a FIN packet.

If a value is entered here, the connection will be closed as soon as the defined time has passed. If not all data could be sent, the connection gets closed using a RST packet and the receiver won't get the remaining data. If all data could be send during the defined time, the connection will be closed using a FIN packet as normally.

6.6.8.2 Protocol (TCP/IP)

LPD/LPR protocol

6.6.8.3 LPR Output

Using this protocol option allows sending print jobs to printer or host which supports LPD (Line Printer Demon) functionality.

Queue

Name of the LPR queue offered by the remote print server. This name must be supported by the remote print server. If jobs are sent to a printer which supports one queue only or if the queue doesn't matter, the name 'AUTO' can be used.

Timeout

Timeout in milliseconds the output port is waiting for replies of the remote print server.

Print banner page

If enabled, a banner page is printed before each job. Not all remote print servers support this feature.

Set job name as title

If enabled, the title / name of the print job is set to job name which was used by FORMS4WORK. The remote print server then will use this job name, too.

Default: On

Send control file before data

If enabled, the LPR control file which contains information about the job, such as job name, job size, etc., is sent to the remote printer server before job data.

Default: On

Filesize 0 supported

The printer needs not to be informed about the size of the job. The printing may start, even if the total size of the job is not known yet.

Default: On

Override filesize

The printer has to be informed about the size of the job before the data is sent. If the total size is not known at the beginning, because the host is still sending data, some printers accept a filesize of 0. If your printer does not accept a filesize of 0, but you don't want to spool the complete job before printing it, you can try to enable this option. If enabled, a filesize of about 2 GB is assumed. Some printers will accept this, even if the final job size will be smaller.

Default: Off

Filesize needed

The printer has to be informed about the size of the job before the data is sent. The printing will not start before the total size of the job is known.

Default: Off

6.6.9 Fiery

6.6.9.1 Fiery Output

see Fiery Properties

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